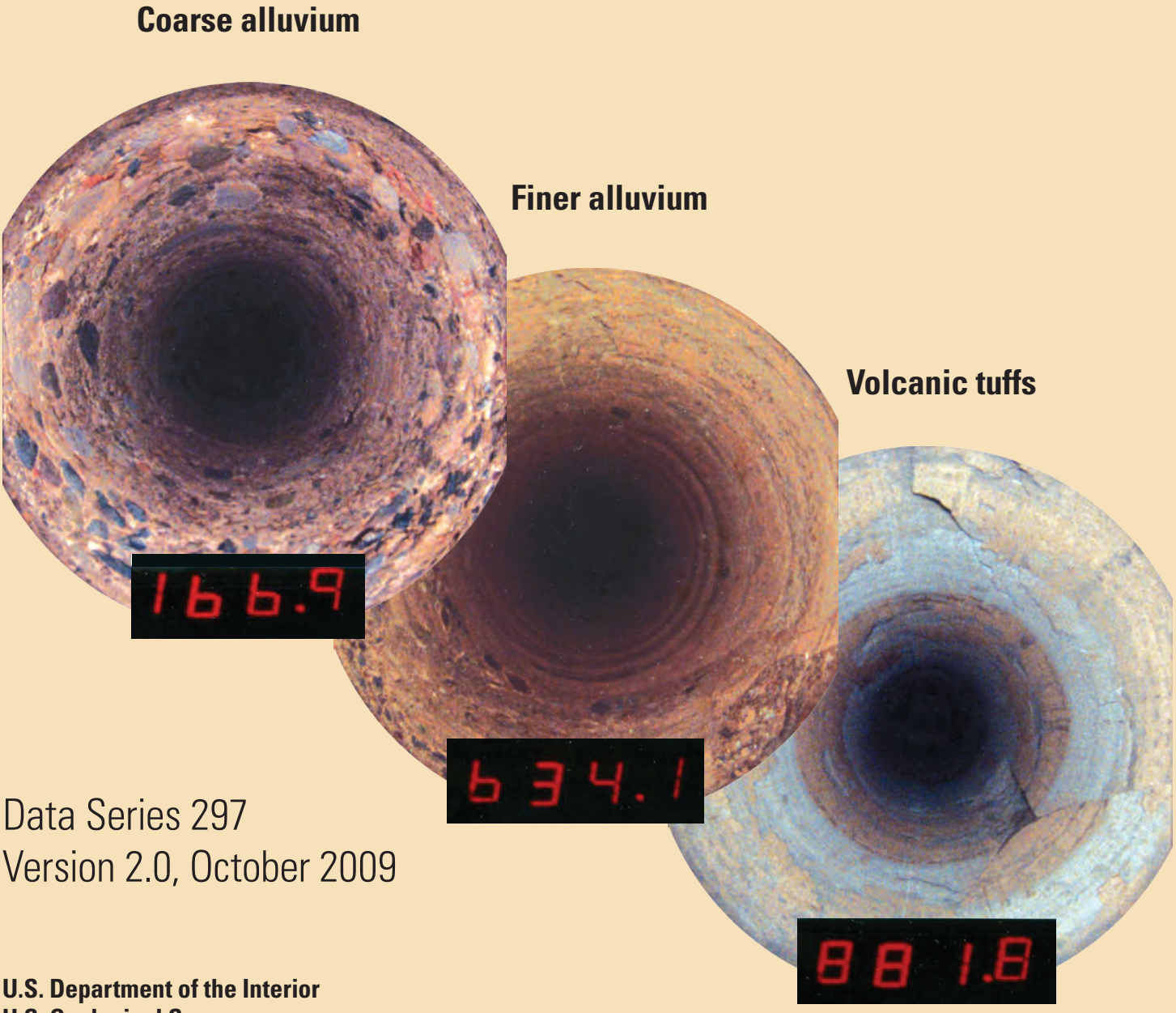
USGS
science for a changing world

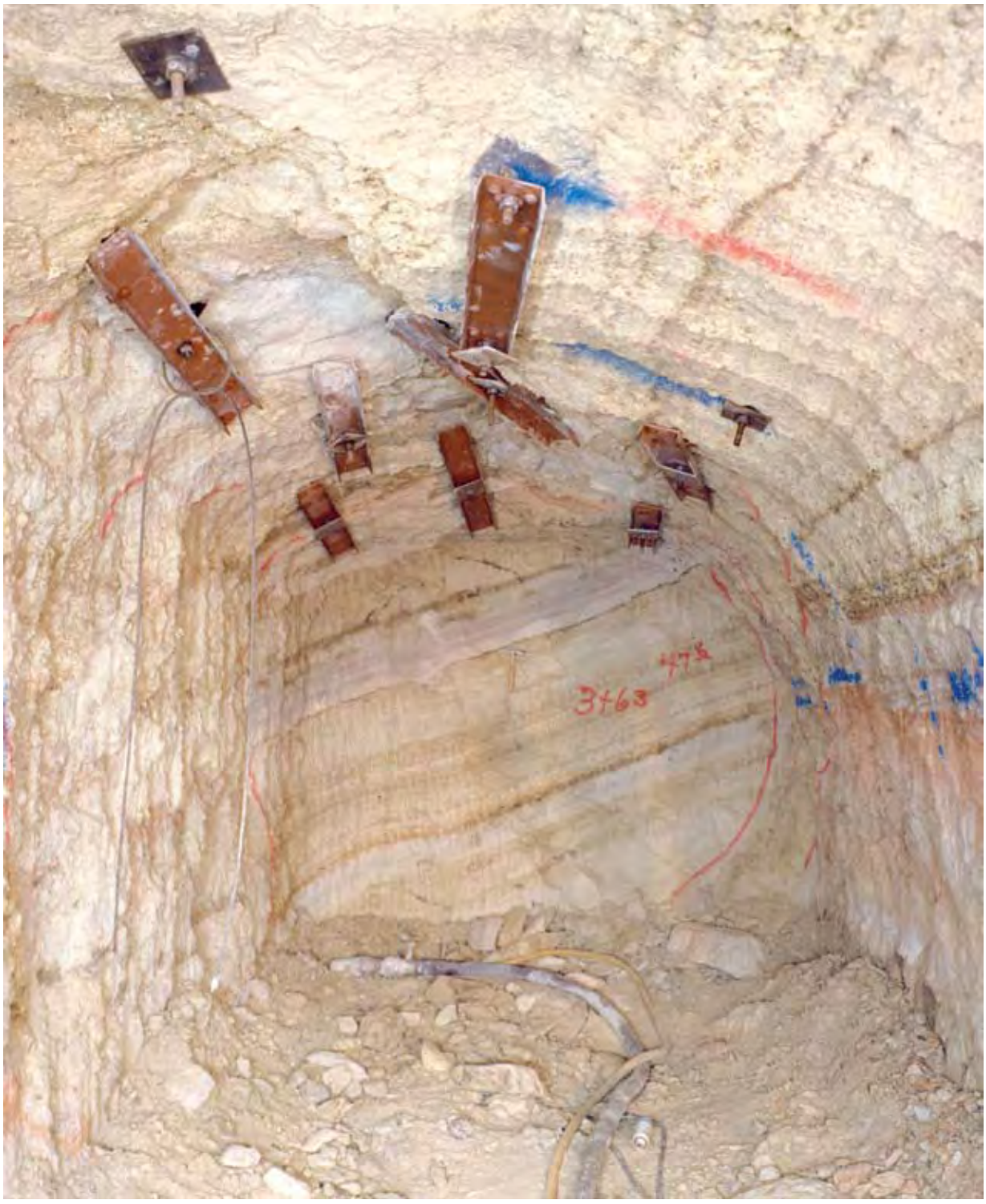
Prepared in cooperation with the U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office, Office of Environmental Management under Interagency Agreement, DE-AI52-07NA28100

Digitally Available Interval-Specific Rock-Sample Data Compiled from Historical Records, Nevada Test Site and Vicinity, Nye County, Nevada



Data Series 297
Version 2.0, October 2009

U.S. Department of the Interior
U.S. Geological Survey



View inside reentry drift U-12n.10 AB shows volcanic tuffs from the Tertiary Tunnel Formation, 4 Member, beds 4C and 4D (Dean R. Townsend, Fenix and Scisson, Inc., written commun., October 5, 1976). The number 3+63 painted on the face indicates 363 feet from the portal opening. Photograph courtesy of Defense Threat Reduction Information Analysis Center.

Cover photograph

Three downhole fish-eye camera views of emplacement hole U-2cs. View from 166.9 feet shows coarse alluvium. View from 634.1 feet shows coarse cobbly alluvium channels cut into finer alluvium. View from 881.8 feet shows a fault in the volcanic tuffs from the Tertiary Paintbrush Group. Photographs courtesy of Gayle A. Pawloski, Lawrence Livermore National Laboratory.

Digitally Available Interval-Specific Rock-Sample Data Compiled from Historical Records, Nevada Test Site and Vicinity, Nye County, Nevada

By David B. Wood

Prepared in cooperation with the U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office, Office of Environmental Management under Interagency Agreement, DE-AI52-07NA28100

Data Series 297
Version 2.0, October 2009

U.S. Department of the Interior
U.S. Geological Survey

U.S. Department of the Interior
DIRK KEMPTHORNE, Secretary

U.S. Geological Survey
Mark D. Myers, Director

U.S. Geological Survey, Reston, Virginia: 2007
Revised: 2009

For product and ordering information:
World Wide Web: http://www.usgs.gov/pubprod
Telephone: 1-888-ASK-USGS
For more information on the USGS--the Federal source for science about the Earth, its natural and living resources, natural hazards, and the environment:
World Wide Web: http://www.usgs.gov
Telephone: 1-888-ASK-USGS

Suggested citation:
Wood, D.B., 2007, Digitally available interval-specific rock-sample data compiled from historical records, Nevada Test Site and vicinity, Nye County, Nevada: U.S. Geological Survey Data Series 297, rev. 2.00, 96 p.

Contents

Figures

Conversion Factors and Datums

Inch/Pound to SI

Multiply	By	To obtain
	Length	
inch (in.)	2.54	centimeter (cm)
inch (in.)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
	Area	
square mile (mi^2)	2.590	square kilometer (km^2)
	Volume	
barrel (bbl), (petroleum, 1 barrel=42 gal)	0.1590	cubic meter (m^3)
gallon (gal)	3.785	liter (L)
gallon (gal)	0.003785	cubic meter (m^3)
cubic foot ft^3)	0.02832	cubic meter (m^3)
	Flow rate	
foot per second (ft/s)	0.3048	meter per second (m/s)
gallon per minute (gal/min)	0.06309	liter per second (L/s)
gallon per day (gal/d)	0.003785	cubic meter per day (m^3/d)
	Mass	
ounce, avoirdupois (oz)	28.35	gram (g)
pound, avoirdupois (lb)	0.4536	kilogram (kg)
	Pressure	
bar	100	kilopascal (kPa)
kilo bar (kb)	1,000	kilopascal (kPa)
pound per square inch (lb/in^2)	6.895	kilopascal (kPa)
kilo pounds per square inch (kpsi)	6.894757	megapascal (MPa)
	Density	
pound per cubic foot (lb/ft^3)	16.02	kilogram per cubic meter (kg/m^3)
pound per cubic foot (lb/ft^3)	0.01602	gram per cubic centimeter (g/cm^3)
pound per cubic foot (lb/ft^3)	0.01602	megagram per cubic meter (Mg/m^3)
	Specific capacity	
gallon per minute per foot [(gal/min)/ft)]	0.2070	liter per second per meter [(L/s)/m]
	Electrical conductivity	
micromhos per centimeter (µmho/cm)	1	Microsiemens per centimeter (µS/cm)
	Velocity	
foot per second (ft/s)	0.0003048	kilometer per second (km/s)

Conversion Factors and Datums—Continued

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:

$$°F=(1.8\times°C)+32.$$

Temperature in degrees Fahrenheit (°F) may be converted to degrees Celsius (°C) as follows:

$$°C=(°F-32)/1.8.$$

Datums

Vertical coordinates are referenced to the North American Vertical Datum of 1929 (NGVD29); see altitude at portal opening, altitude of land surface, and reference point elevation in tables.

Horizontal coordinates are referenced to both the North American Datum of 1927 (NAD27) and 1983 (NAD83); see Nevada State Plane coordinates, latitude/longitude, decimal latitude/longitude, and UTM coordinates in tables.

Altitude, as used in this report, refers to distance above the vertical datum.

Digitally Available Interval-Specific Rock-Sample Data Compiled from Historical Records, Nevada Test Site and Vicinity, Nye County, Nevada

By David B. Wood

Abstract

Between 1951 and 1992, 828 underground tests were conducted on the Nevada Test Site, Nye County, Nevada. Prior to and following these nuclear tests, holes were drilled and mined to collect rock samples. These samples are organized and stored by depth of borehole or drift at the U.S. Geological Survey Core Library and Data Center at Mercury, Nevada, on the Nevada Test Site. From these rock samples, rock properties were analyzed and interpreted and compiled into project files and in published reports that are maintained at the Core Library and at the U.S. Geological Survey office in Henderson, Nevada. These rock-sample data include lithologic descriptions, physical and mechanical properties, and fracture characteristics. Hydraulic properties also were compiled from holes completed in the water table. Rock samples are irreplaceable because pre-test, in-place conditions cannot be recreated and samples can not be recollected from the many holes destroyed by testing. Documenting these data in a published report will ensure availability for future investigators.

Introduction

Rock-sample data are available from both underground (boreholes, shafts, tunnels, and drifts) and surface (mostly outcrops and a few trenches) sites located on and around the Nevada Test Site (NTS), Nye County, Nevada. These data include rock-sample interval locations, lithologic descriptions, physical and mechanical rock properties, fracture characteristics, and hydraulic properties. Acronyms and abbreviations in common usage at the NTS are described in the auxiliary ‘nts_acr_abv’ worksheets in the databases (appendixes A–F).

Purpose and Scope

This report documents rock samples and data derived from these samples in digital spreadsheets. Specifically, this report presents five databases (rock samples, lithologic descriptions, rock properties, fracture characteristics, and hydraulic properties). Data presented in these databases were obtained from rock samples and compiled from paper records contained in the historical files and from published reports located at the U.S. Geological Survey (USGS) Core Library and Data Center at Mercury (on the NTS) and at the USGS office in Henderson, Nevada.

The many logs and samples presented in this report represent a large investment over many years and are unique, in that in many cases, they cannot be acquired again. Pre-test, in-place conditions, as well as conditions that existed prior and during nuclear testing can not be recreated and rock samples (and associated analysis and interpretations) from the many holes destroyed by testing can not be recollected. Measurement techniques continuously evolve over time and the methods of interpretation are constantly being revised as new techniques become available. The application of these new methods often depends on the availability of the original subsurface data and the ability of individuals to understand both how these data were collected and how associated interpretations were developed. Documenting these data in a published report will ensure data availability for posterity. Furthermore, the condition of the original paper records is already poor and data are illegible for some records. The continuing deterioration of these records could preclude their availability to future investigators. All subsurface data, regardless of program or application, needs to be archived for future use at the NTS. Only through publication and archiving, can these data be fully developed and utilized in making sound decisions concerning future activities at the NTS and protection of human health and safety.

Background

The NTS (fig. 1) was established by the United States during the 1950s as the primary continental proving ground for nuclear testing and peaceful applications of nuclear explosions (U.S. Congress, 1989). The site, which occupies about 1,375 mi^2 of south-central Nevada, was chosen by the Atomic Energy Commission (AEC, predecessor to the U.S. Department of Energy [DOE]) primarily because of its remoteness from population centers and because the land was under military control (Fehner and Gosling, 2000). Since 1951, 928 tests have been conducted at the NTS. Of these tests, 828 were detonated underground (U.S. Department of Energy, 2000). In addition to the holes used for underground emplacement of nuclear weapons, many auxiliary holes were drilled and mined adjacent to the emplacement holes for collecting supplemental data. The databases presented in this report represent an accumulation of data from each of these holes.

Geologists, geophysicists, hydrologists, and other specialists have worked in cooperation with the DOE, National Nuclear Security Administration, Nevada Site Office (and its predecessors) and the National Laboratories to provide Earth science data since 1956 (P.P. Orkild, U.S. Geological Survey, written commun., 1987). The USGS and AEC agreed to cooperate in geologic, geophysical, and hydrologic investigations at the NTS under a memorandum of understanding (No. AT (2902)474) dated June 1, 1957. A modification to the memorandum which incorporates the entire agreement (Modification No. 3, Schedule 1 to Appendix A, page 3, item 4), dated April 3, 1959 states:

> *"Operation of a Field and Geological Data Repository and Core Library. Maintain field records at a central location at NTS which will have a recurring use for reference purposes. It is intended that the Geological Survey have on file representative logs of significant excavations, and establish and maintain core libraries (exclusive of radiochemical cores) in accordance with mutually agreed USGS-Commission rules and procedures."*

The USGS Core Library and Data Center was established in temporary quarters during 1959 at Mercury, Nevada, and a permanent facility was built during the late 1960s (G.L. Dixon, U.S. Geological Survey, written commun., 1983). Because the USGS was designated as the caretaker of the rock samples, personnel from the National Laboratories as well as DOE and Department of Defense (DOD) contractors were continually accessing rock samples at the Core Library. This resulted in the USGS amassing paper copies of many of the preliminary results of the rock-sample analyses and interpretations as well as internal and published reports resulting from this work.

Geohydrologic Setting

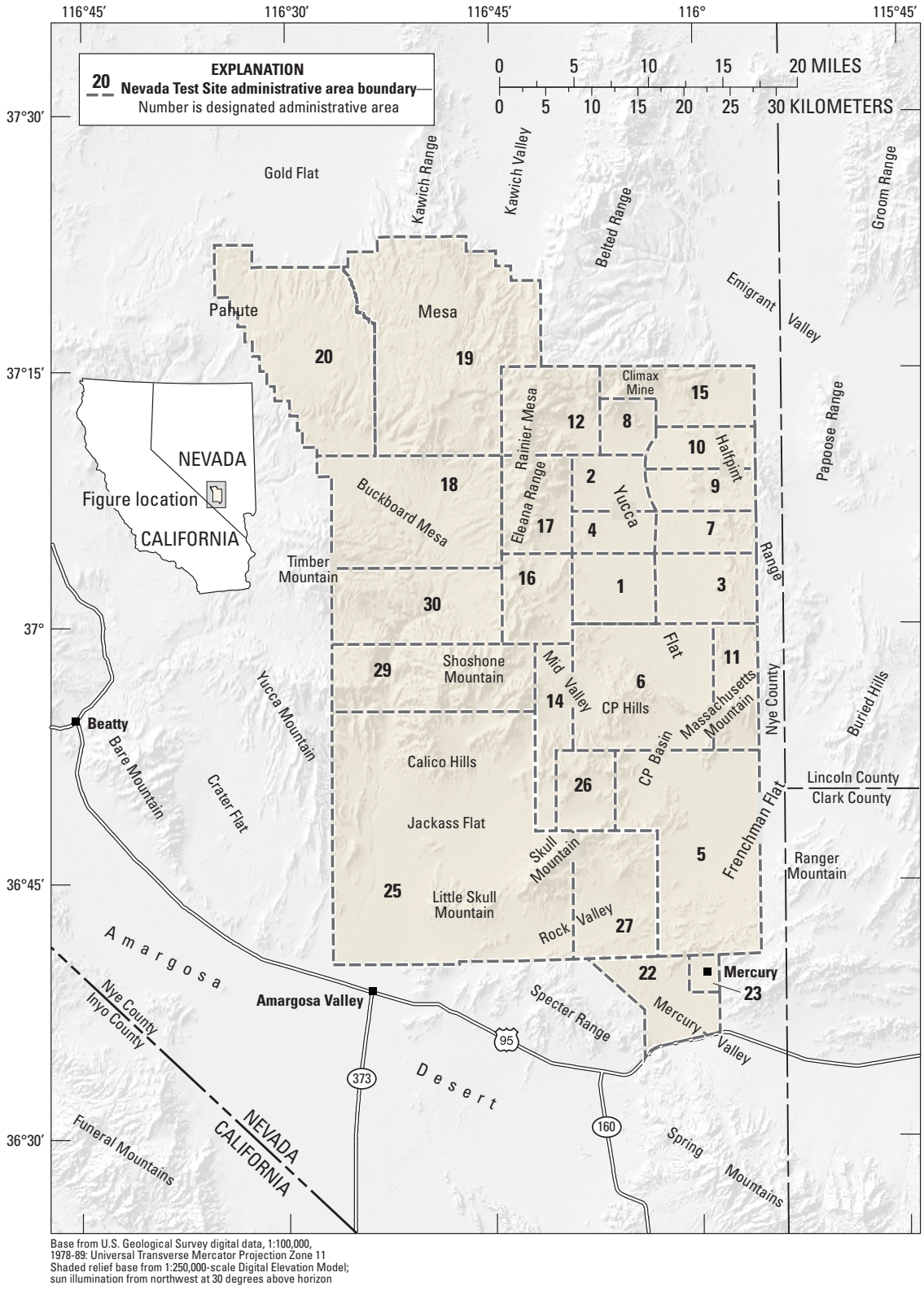
The NTS is entirely within the Great Basin region of the Basin and Range physiographic province. The region is characterized by mountain ranges with a general north-south orientation separated by basins (valleys) that are filled by accumulations of unconsolidated to partly consolidated sedimentary deposits and underlain by consolidated rocks that also form the surrounding ranges (Stewart, 1980). The unconsolidated rocks at the NTS consist of basin fill and volcanic and sedimentary rocks. Consolidated rocks consist of volcanic, metamorphic and intrusive, siliciclastic, and carbonate rocks. The generalized distribution of rock types in the vicinity of the NTS is shown in figure 2.

The stratigraphic nomenclature at the NTS has evolved over time. The USGS conducted surface-mapping field work between 1958 and 1964 that resulted in the publication of thirty-four 7.5-minute geologic maps (Byers and others, 1989). The stratigraphy and lithology has been continually refined by investigators from various organizations (including DOE/DOD subcontractors, the National Laboratories, and USGS) by inspection of rock samples collected from holes drilled and mined at the NTS and vicinity. This has resulted in many informal units in common usage at the NTS. Volcanic rocks are summarized in Byers and others (1976) and Sawyer and others (1994). Carbonate rocks are summarized in Cole and Cashman (1999). Stratigraphic units are lumped into hydrogeologic units and discussed in IT Corporation (1996a, 1996b), Faunt and others (2004), and Sweetkind and others (2004).

The hydrologic setting of the NTS is similar to that of most of the Basin and Range province. It is characterized by localized aquifers within the alluvial deposits in the eastern, central, and southern parts. Regional aquifers are mostly within complexly folded and faulted limestones and dolomites that underlie the localized aquifers in the eastern and southern parts, but also are within fractured volcanic rocks in the western part of the NTS. Much of the ground-water flow is interbasin; that is, flow is not strictly controlled by the surface topography that defines surface-water drainage basins (Blankennagel and Weir, 1973; Winograd and Thordarson, 1975; Laczniak and others, 1996; Slate and others, 2000; Potter and others, 2002; Workman and others, 2002).

Site Designations

Rock-sample sites are identified primarily by the USGS NTS unique number and secondarily by the NTS area (the NTS is comprised of 26 administrative areas [fig. 1]), a Redbook hole number, and USGS National Water Information System (NWIS) site identification number (U.S. Geological Survey, 2005). A unique number is necessary because spatial (*X*-*Y*) coordinates are currently not available for some sites. Site designations are described in the tables listed in the appendixes of this report.



Base from U.S. Geological Survey digital data, 1:100,000, 1978-89: Universal Transverse Mercator Projection Zone 11
Shaded relief base from 1:250,000-scale Digital Elevation Model; sun illumination from northwest at 30 degrees above horizon

Figure 1. Location of Nevada Test Site and pertinent physiographic features, Nye County, Nevada.

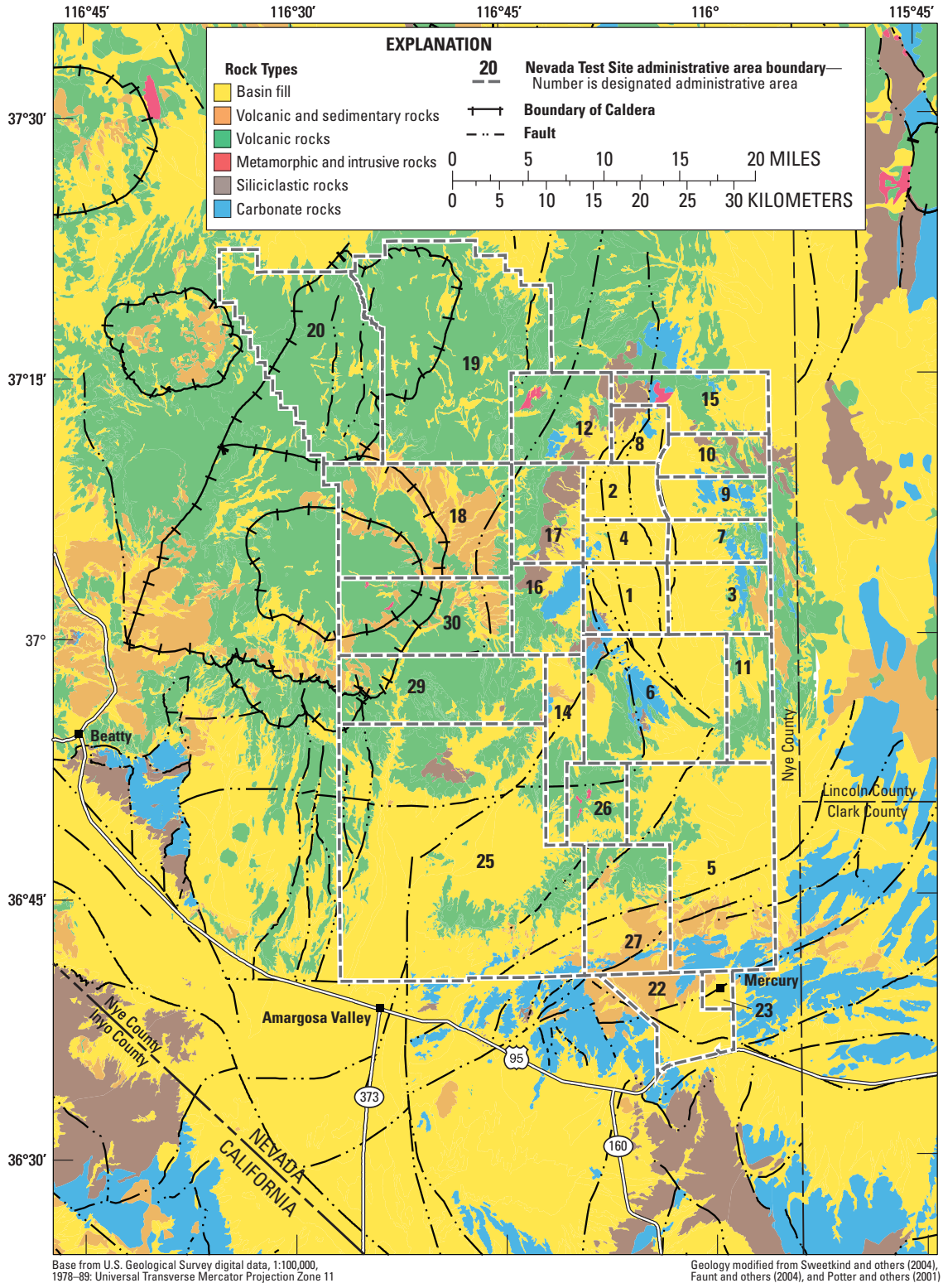


Figure 2. Generalized distribution of rock types in vicinity of Nevada Test Site, Nye County, Nevada.

Digital Data

The USGS compiled both Microsoft© Excel spreadsheets and Microsoft© Access tables, by depth interval, of available rock-sample, thin-section (prepared from rock samples), and aquifer-test data stored at the USGS Core Library and Data Center in Mercury and the USGS office in Henderson, Nevada. These digital spreadsheets and tables are the Rock-Sample database, Lithologic-Description database, Rock-Property database, Fracture-Characteristic database, and Hydraulic-Property database. Records were compiled for vertical (boreholes and shafts) and horizontal (tunnels and drifts) underground sites and for surface locations (mostly outcrops and a few trenches). Rock-sample locations were inventoried by personnel stationed at the Mercury facility. Rock-sample records were compiled by personnel stationed at the Henderson office from paper copies of records contained in the historical files stored at the Mercury and Henderson locations and from paper copies of published reports. Thin-section compilations were provided in electronic format. A small percentage of lithologic descriptions, rock properties, and fracture characteristics were provided in electronic format towards the end of the study.

Rock-Sample Database

The USGS catalogued interval-specific locations for rock samples and thin sections (prepared from rock samples) collected from both underground and surface sites located on and around the NTS (fig. 3). The Rock-Sample database presents locations of rock samples and thin sections collected by DOE/DOD contracting organizations, the National Laboratories, and USGS and stored at the USGS Core Library. The database is both a digital spreadsheet (appendix A) and table (appendix F). Field-content headings are described in table A1. Locations of all rock samples and thin sections stored at the Mercury facility have been compiled. However, rock samples stored at the USGS Yucca Mountain Program (YMP) sample management facility in NTS Area 25 (fig. 1) are part of another program and have not been included in this compilation.

A core sample collected from exploratory hole UE-20f and a cuttings sample collected from exploratory hole UE-14b are used to show examples of rock-sample data at the NTS. Hole UE-20f is the deepest hole drilled at the NTS and the core sample collected from the bottom (13,670–13,686 foot) interval of this hole shows an example of welded volcanic tuff. Wooden blocks indicate sections of core removed from the USGS Core Library (fig. 4*A*). The cuttings sample collected from the 1,120- to 2,160-ft interval of exploratory hole UE-14b shows an example of variations in welded volcanic tuffs (fig. 4*B*).

Lithologic-Description Database

The USGS compiled interval-specific records of lithologic descriptions for both underground and surface sites located on and around the NTS (fig. 5). The Lithologic-Description database presents lithologies interpreted and re-interpreted from rock samples and geophysical and video logs in boreholes and shafts and mapped inside tunnels and drifts by investigators from DOE/DOD contracting organizations, the National Laboratories, and USGS. The database is both a digital spreadsheet (appendix B) and table (appendix F). Field-content headings are described in table B1. Lithologic descriptions have been compiled for sites located in Frenchman, Jackass and Yucca Flats, and on Buckboard, Pahute, and Rainier Mesas, and parts of the Amargosa Desert near the NTS (fig. 1).

The lithologic-description data for borehole ER-6-1 are used to show a graphical example of generalized lithologic units at the NTS (fig. 6). The general units penetrated in this hole are alluvium, nonwelded to welded and bedded tuff, dolomite, and quartzite. The lithology was interpreted by Sigmund L. Drellack, Jr. and Lance B. Prothro from National Security Technologies, LLC and by Robert L. McCall from Stoller-Navarro Joint Venture.

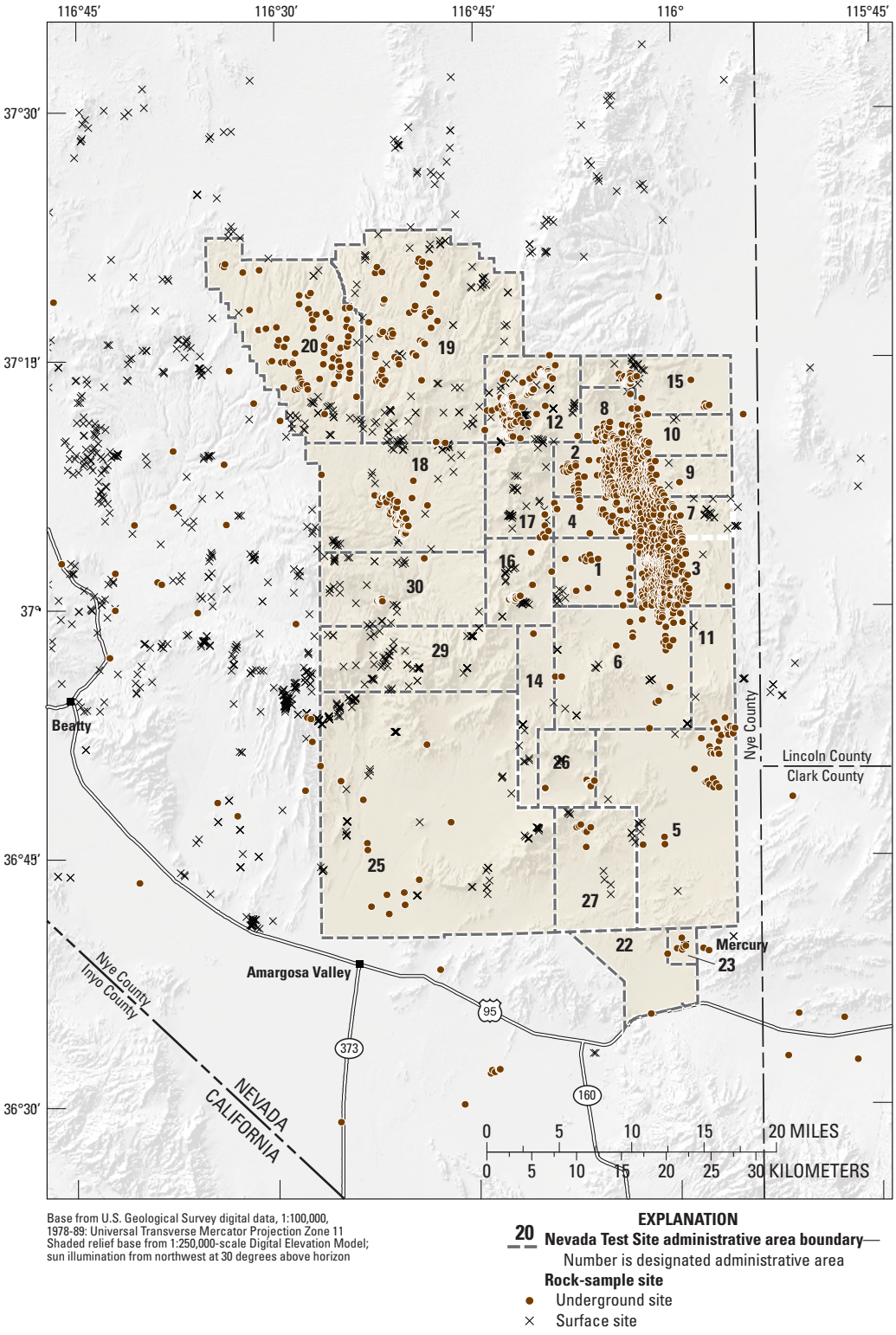
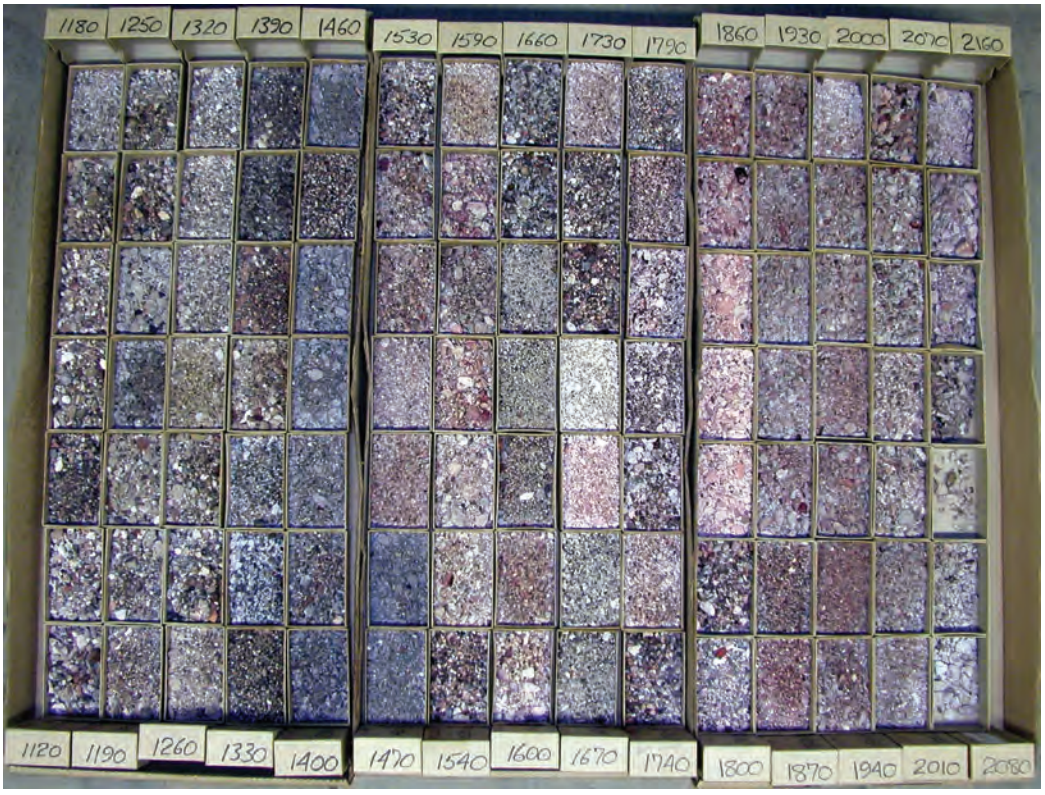


Figure 3. Areal distribution of rock-sample sites in vicinity of Nevada Test Site, Nye County, Nevada.

A. Subsurface core collected from bottom interval of exploratory hole UE-20f; deepest hole drilled at Nevada Test Site. Core sample shows welded volcanic tuff from 13,670- to 13,686-foot interval. Wooden blocks indicate sections of core removed from U.S. Geological Survey Core Library. Photograph taken by Jerry Magner, U.S. Geological Survey.



B. Subsurface cuttings collected from exploratory hole UE-14b. Cuttings sample shows variations in welded volcanic tuffs from 1,120- to 2,160-foot interval. Photograph taken by Jerry Magner, U.S. Geological Survey.

Figure 4. Examples of subsurface core and cuttings collected from exploratory holes at Nevada Test Site, Nye County, Nevada.

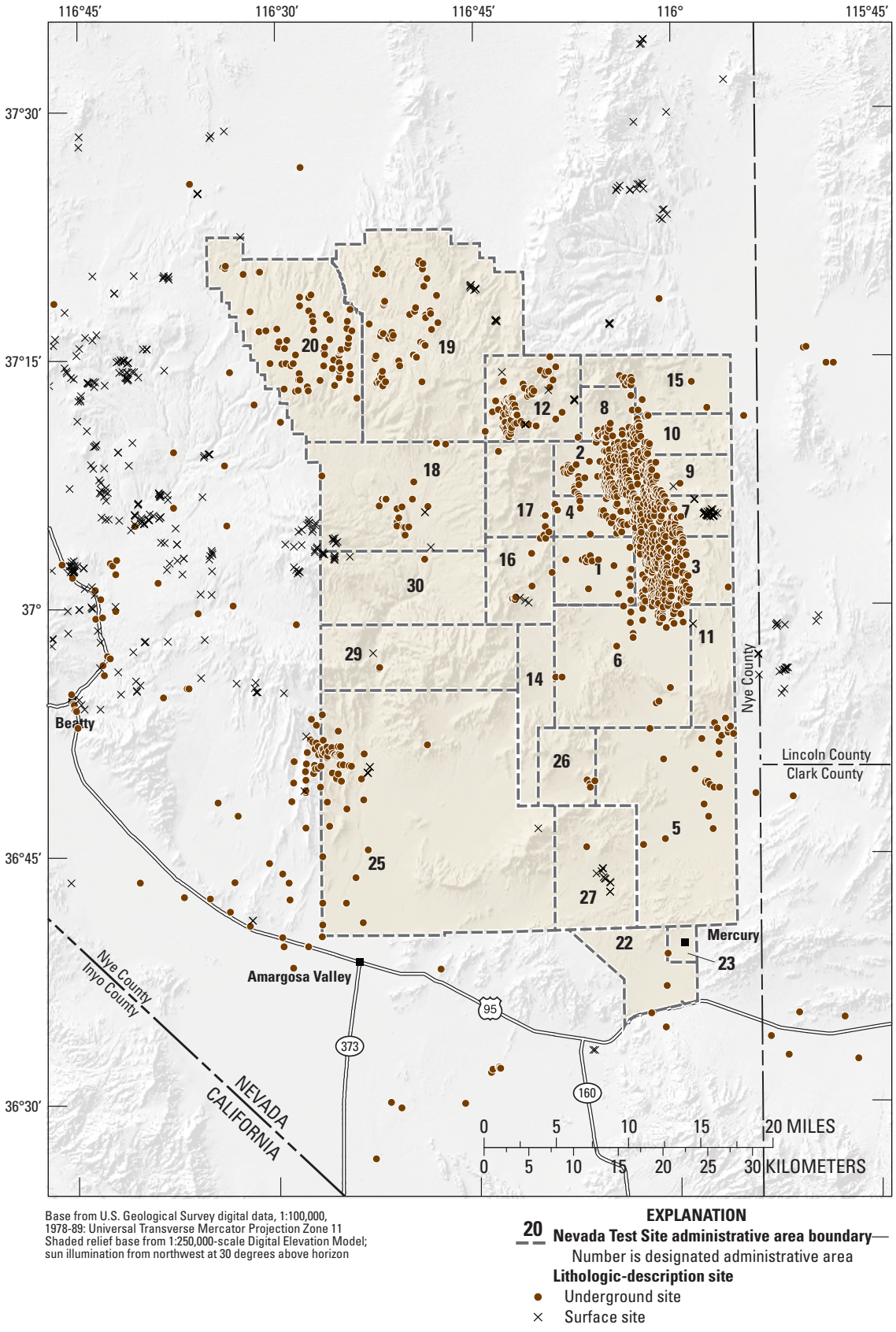


Figure 5. Areal distribution of lithologic-description sites in vicinity of Nevada Test Site, Nye County, Nevada.

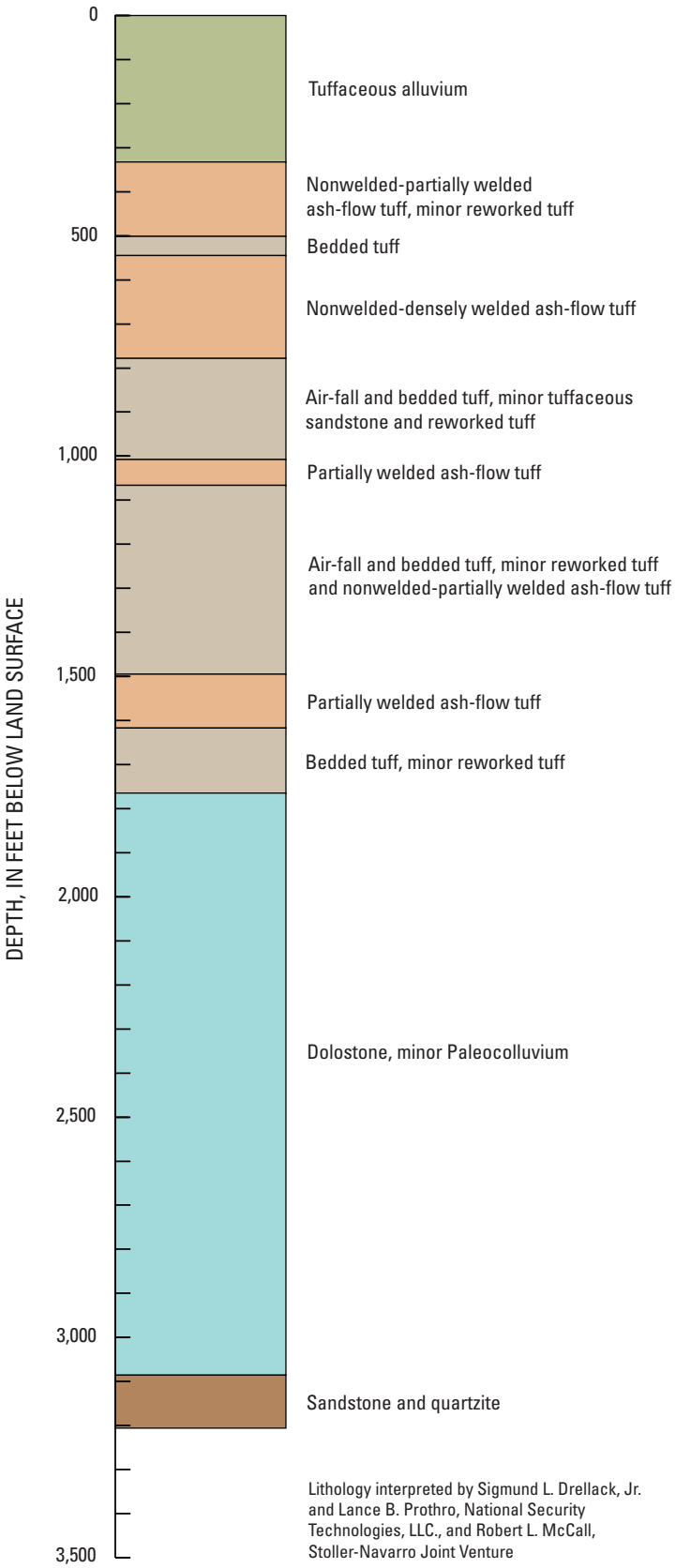


Figure 6. Example of generalized lithologic units in borehole ER-6-1, Nevada Test Site, Nye County, Nevada.

Rock-Property Database

The USGS compiled interval-specific records of rock-property data for both underground and surface sites located on and around the NTS (fig. 7). The Rock-Property database presents physical and mechanical properties analyzed from rock samples by investigators from DOE/DOD contracting organizations, the National Laboratories, and USGS. The database is both a digital spreadsheet (appendix C) and table (appendix F). Field-content headings are described in table C1. Physical and mechanical rock properties have been compiled for sites located in Frenchman and Yucca Flats and on Buckboard, Pahute, and Rainier Mesas (fig. 1). Physical and mechanical rock properties are available but have not been compiled for holes located in Jackass Flat (fig. 1).

Samples collected from exploratory hole U-4d Ex. #1 and analyses contained in Lawrence Livermore National Laboratory project files are used to show examples of rock-property data at the NTS. Depth profiles are shown for grain density, wet (natural-state) bulk density, and wet water content by weight from exploratory hole U-4d Ex. #1 (fig. 8).

Fracture-Characteristic Database

The USGS compiled interval-specific records of fracture-characteristic data for both underground and surface sites located on and around the NTS (fig. 9). The Fracture-Characteristic database presents locations of fractures interpreted from rock samples and geophysical and video logs in boreholes and shafts and mapped inside tunnels and drifts by investigators from DOE/DOD contracting organizations, the National Laboratories, and USGS. The database is both a digital spreadsheet (appendix D) and table (appendix F). Field-content headings are described in table D1 . Fracture characteristics have been compiled for sites located in Frenchman and Yucca Flats, and on Buckboard, Pahute, and Rainier Mesas (fig. 1). Fracture characteristics are available but have not been compiled for holes located in Jackass Flat (fig. 1).

A core sample collected from the core hole MH-2, drilled vertically in the invert (floor) of emplacement drift U-12n.10 at 303.77 ft from the portal opening, is used to show an example of fracture-characteristic data at the NTS. Slickensides and black staining on fracture surfaces are indicated at 79 ft (fig. 10).

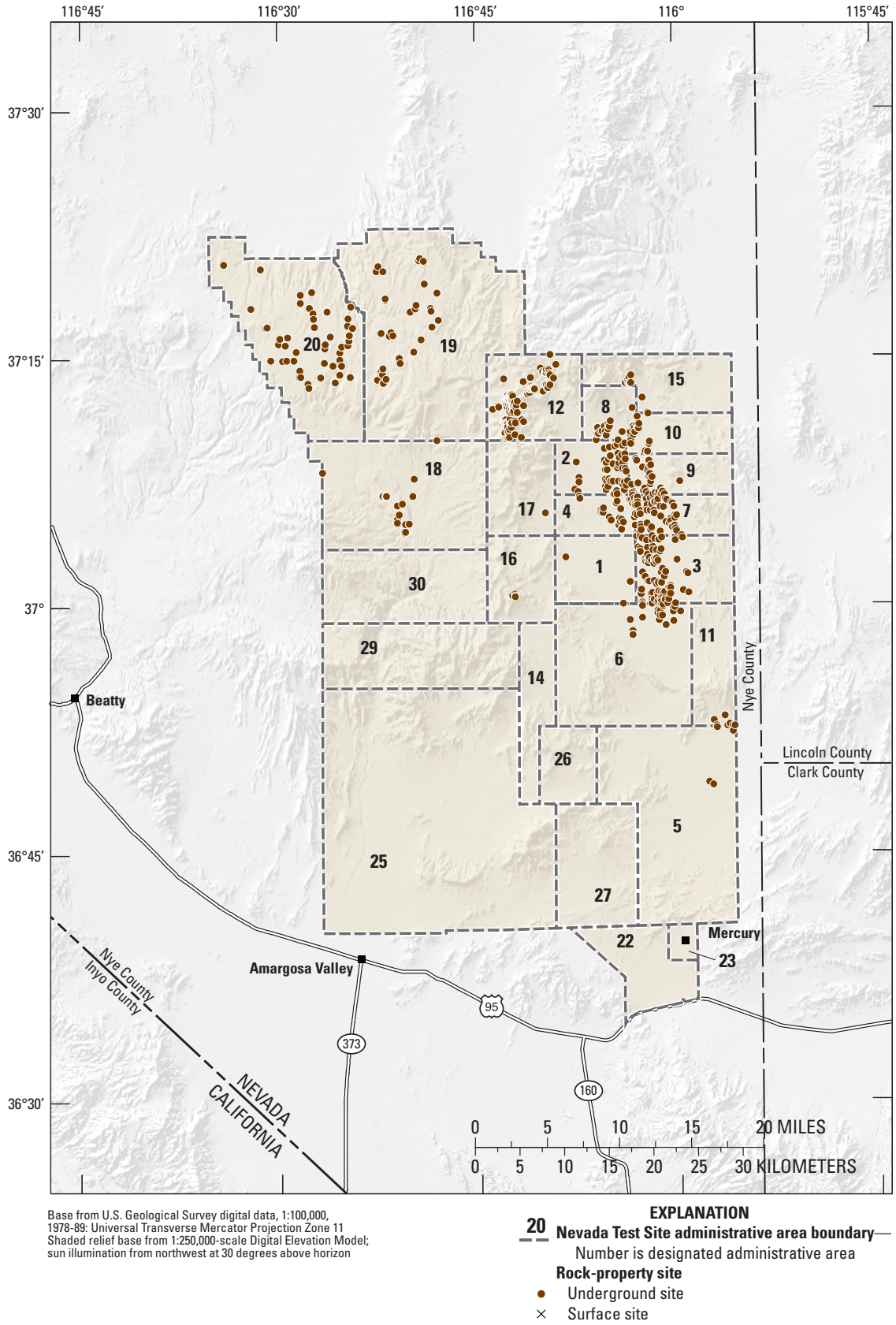


Figure 7. Areal distribution of rock-property sites in vicinity of Nevada Test Site, Nye County, Nevada.

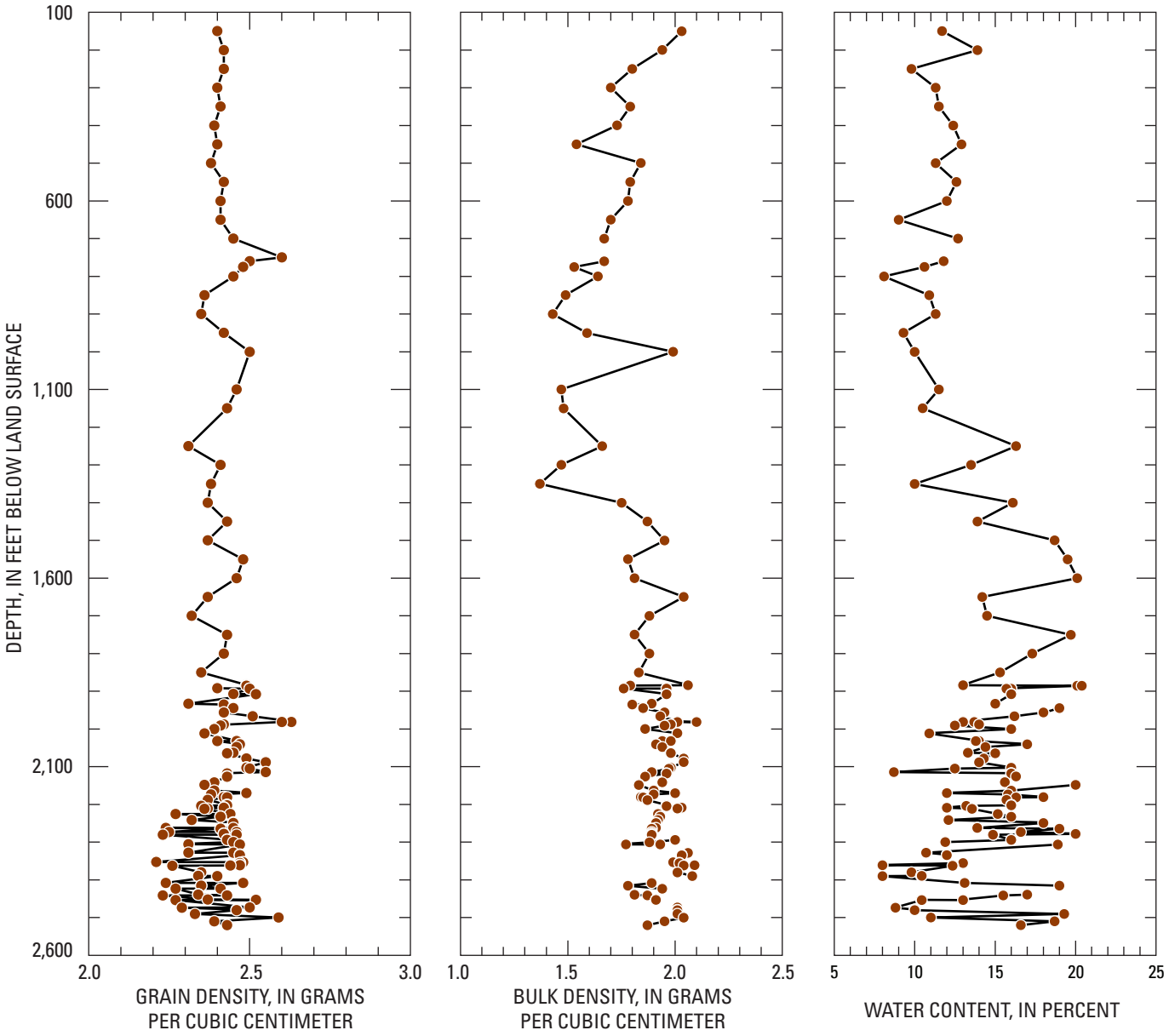


Figure 8. Examples of subsurface rock-property data collected at Nevada Test Site, Nye County, Nevada. Depth profiles of grain density, wet (natural-state) bulk density, and wet water content by weight are from exploratory hole U-4d Ex. #1. Anomalous values not shown.

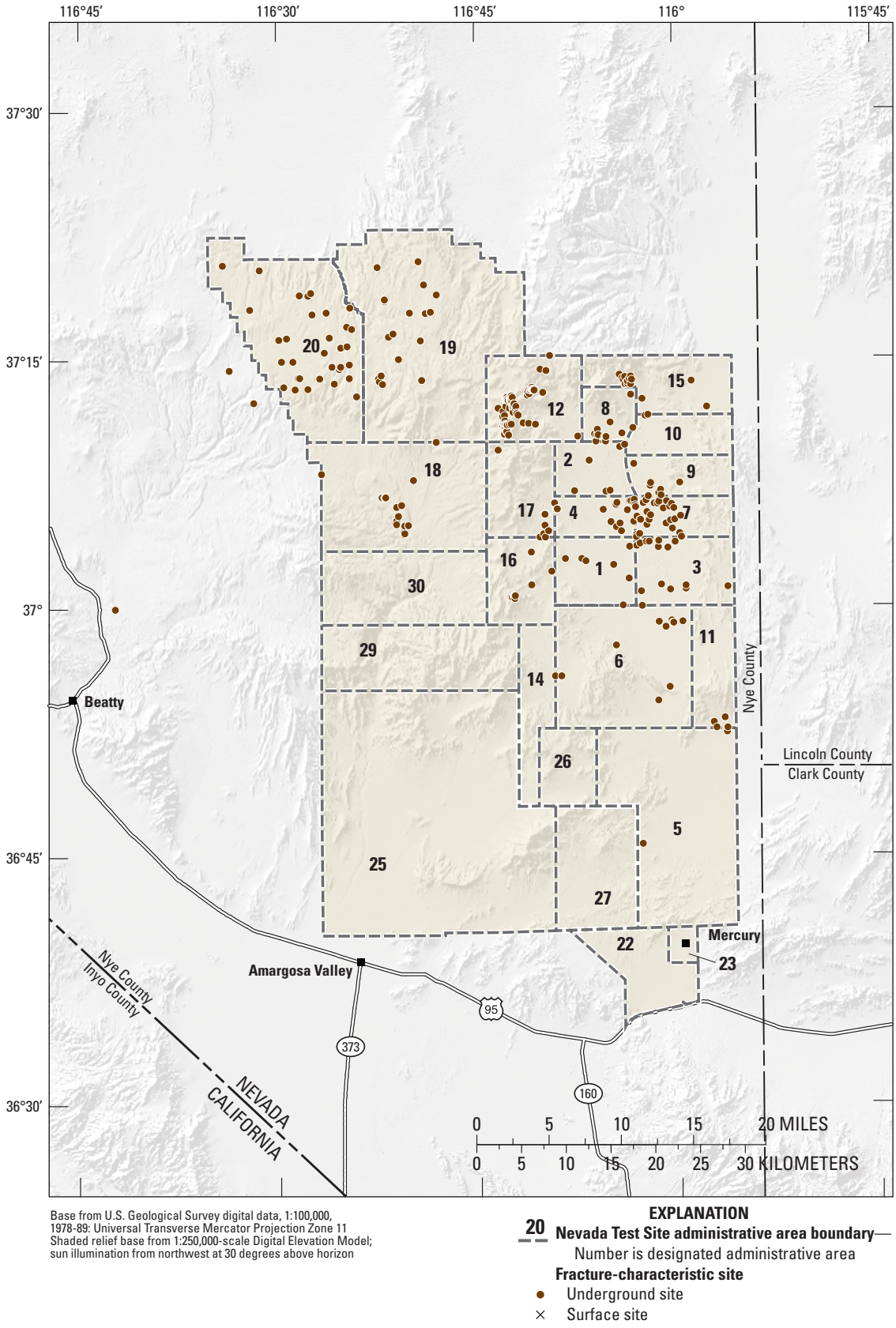


Figure 9. Areal distribution of fracture-characteristic sites in vicinity of Nevada Test Site, Nye County, Nevada.

Figure 10. Example of subsurface fracture characteristics in vertical core hole MH-2 in floor of emplacement drift U-12n.10 at 303.77 feet from portal opening, Nye County, Nevada. Core sample shows slickensides and black staining on fracture surfaces at 79 feet. Photograph taken by Jerry Magner, U.S. Geological Survey.

Hydraulic-Property Database

The USGS compiled interval-specific records of hydraulic-property data for both underground and surface sites located on and around the NTS (fig. 11). The Hydraulic-Property database presents water-level response from injection and withdrawal of water during aquifer tests conducted by investigators from DOE/DOD contracting organizations, the National Laboratories, and USGS. The database is both a digital spreadsheet (appendix E) and table (appendix F). Field-content headings are described in table E1. Hydraulic properties have been compiled for sites located in Frenchman and Yucca Flats, and on Buckboard, Pahute, and Rainier Mesas (fig. 1). Hydraulic properties are available but have not been compiled for holes located in Jackass Flat (fig. 1).

Aquifer testing conducted in water well WW-A and reported in Price and Thordarson (1961) are used to show examples of hydraulic-property data at the NTS. Water-level recovery is shown following bailing tests of 3,000, 74, and 33 gallons, respectively (fig. 12).

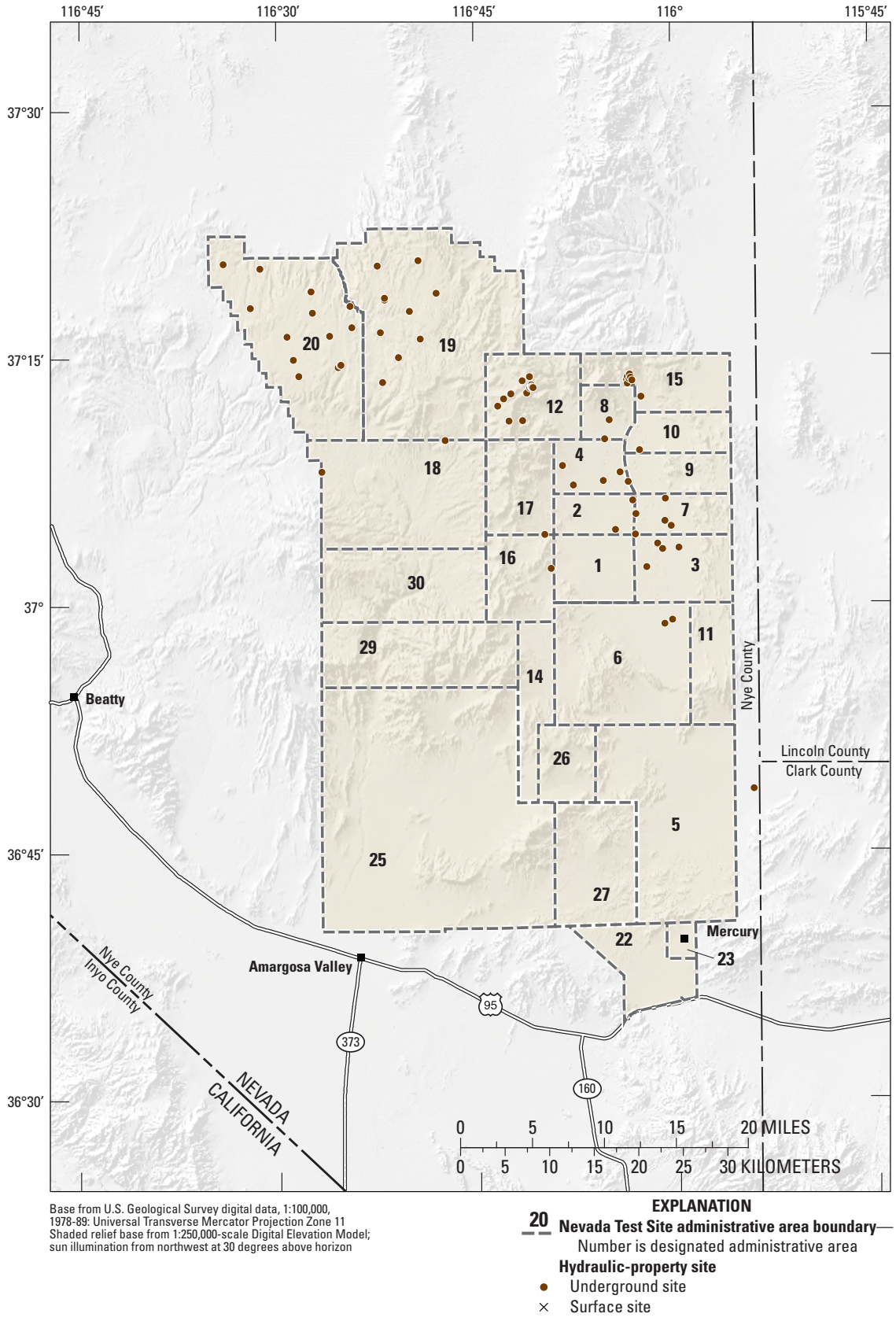


Figure 11. Areal distribution of hydraulic-property sites in vicinity of Nevada Test Site, Nye County, Nevada.

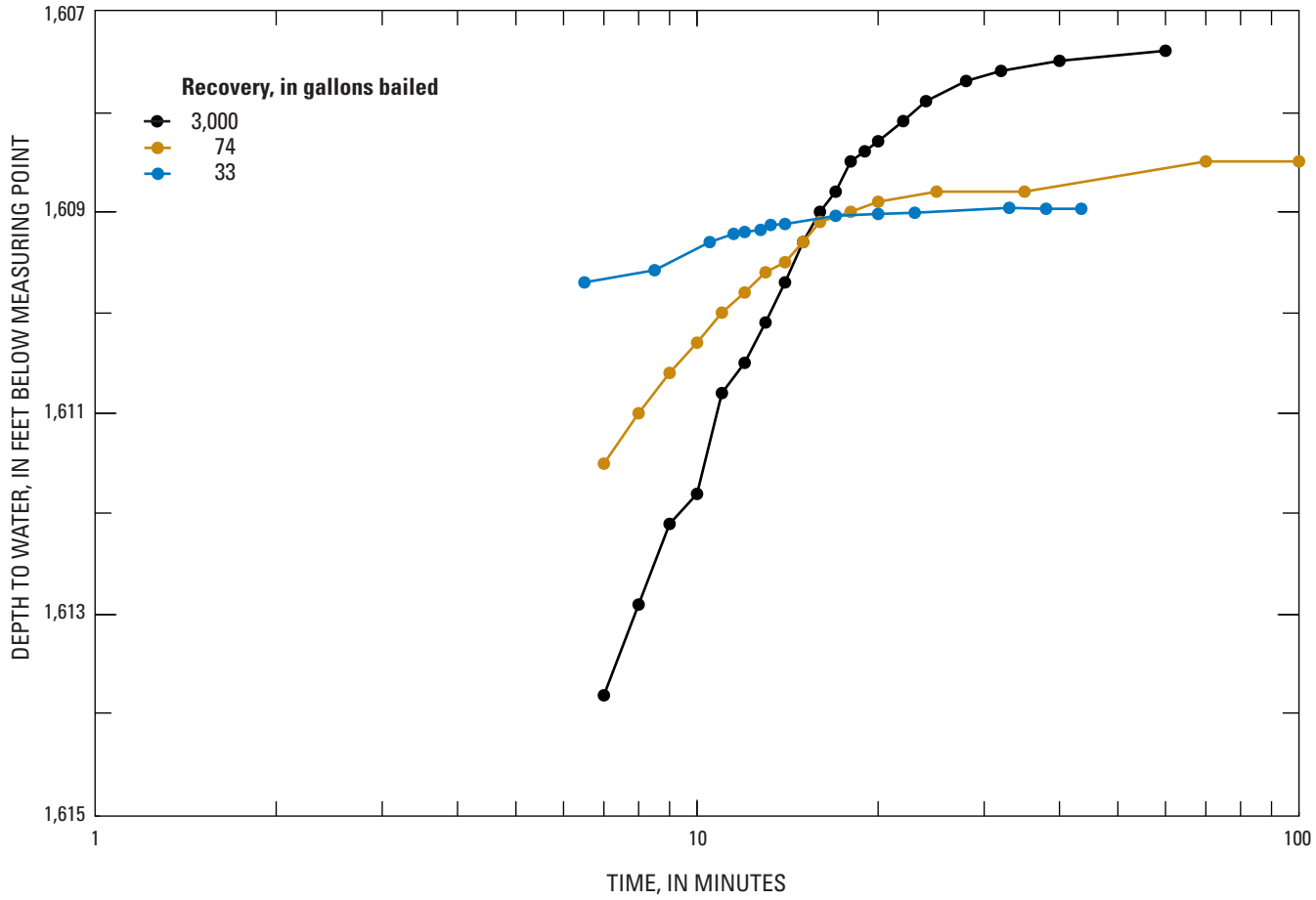


Figure 12. Example of subsurface hydraulic-property data collected at Nevada Test Site, Nye County, Nevada. Recovery shown from three bailing tests conducted in water well WW-A.

Summary

Between 1951 and 1992, 828 underground tests were conducted on the Nevada Test Site. Prior to and following these nuclear tests, holes (boreholes, shafts, tunnels, and drifts) were drilled and mined for the collection of rock samples. The U.S. Geological Survey has worked in cooperation with U.S. Department of Energy (and its predecessors) and the National Laboratories since 1956 and the USGS Core Library and Data Center was established at Mercury, Nevada, on the Nevada Test Site, through a modification to an existing memorandum of understanding dated April 3, 1959. Rock samples collected from these holes are stored in the Core Library and paper copies of records and reports derived from analyses and interpretation of rock samples are stored in the historical files at both the Mercury facility and the USGS office in Henderson, Nevada. The understanding of stratigraphy that underlies the NTS and vicinity continues to evolve, through interpretation of rock samples from new holes that are drilled and mined, resulting in a multitude of formal and informal units in common use. Rock samples are irreplaceable because pre-test, in-place conditions cannot be recreated and samples cannot be recollected from the many holes destroyed by testing. The condition of the original paper records is rapidly deteriorating, which makes re-compilation unlikely. Documenting these data in a published report will ensure availability for future investigators.

Rock samples have been catalogued by depth interval for samples stored at the U.S. Geological Survey Core Library. Rock-sample data are compiled from paper records contained in file cabinets and from published reports located at the Mercury facility and at the U.S. Geological Survey Henderson office. Rock samples and thin sections are available for both underground and surface sites located at the Nevada Test Site and vicinity. Lithologic descriptions, physical and mechanical properties, fracture characteristics, and hydraulic-property data from aquifer testing are available for sites located in Frenchman and Yucca Flats and on Buckboard, Pahute, and Rainier Mesas. Lithologic descriptions also are available for holes located in Jackass Flat. These data have been compiled into five digital spreadsheets.

Acknowledgments

The author appreciates the cooperation of Bechtel Nevada; Birdwell Division of Seismograph Service Corporation; Desert Research Institute; Fenix and Scisson of Nevada (formerly Fenix and Scisson, Inc.); International Technology Corp.; Los Alamos National Laboratory (formerly Los Alamos Scientific Laboratory); Lawrence Livermore National Laboratory (formerly Lawrence Radiation Laboratory); National Security Technologies, LLC; Nevada Division of Water Resources; Nevada Testing Laboratories; Pittsburg Testing Laboratory; Raytheon Services Nevada; Reynolds Electrical and Engineering Co.; Sandia National Laboratories; Shaw Group, Inc.; Stoller-Navarro Joint Venture; Terra Tek, Inc. (a Schlumberger company, sometimes referred to as TerraTek Research); U.S. Air Force; U.S. Army Corps of Engineers Waterways Experiment Station; U.S. Department of Energy (formerly Energy Research and Development Administration; formerly Atomic Energy Commission); U.S. Department of Defense Defense Threat Reduction Agency (formerly Defense Special Weapons Agency; formerly Defense Nuclear Agency; formerly Defense Atomic Support Agency); USGS Geologic Division; and University of Illinois Talbot Laboratory. The author extends special thanks to Gayle A. Pawloski and Mavrik Zavarin from Lawrence Livermore National Laboratory; Edward M. Kwicklis from Los Alamos National Laboratory; Richard G. Warren from Los Alamos National Laboratory (retired); Sigmond L. Drellack Jr., Lance B. Prothro, and Margaret J. Townsend from National Security Technologies, LLC; Charles E. Russell from Desert Research Institute; Harry R. Covington from USGS (retired); Gary L. Dixon from USGS (retired), and Jerry E. Magner from USGS (retired).

References Cited

Blankennagel, R.K., and Weir, J.E., Jr., 1973, Geohydrology of the eastern part of Pahute Mesa, Nevada Test Site, Nye County, Nevada: U.S. Geological Survey Professional Paper 712-B, 35 p.

Byers, F.M., Jr., Carr, W.J., and Orkild, P.P., 1989, Volcanic centers of Southwestern Nevada, Evolution of understanding, 1960–1988: Journal of Geophysical Research, v. 94, no. B5, p. 5908–5924.

Byers, F.M., Jr., Carr, W.J., Orkild, P.P., Quinlivan, W.D., and Sargeant, K.A., 1976, Volcanic suites and related cauldrons of Timber Mountain-Oasis Valley caldera complex, Southern Nevada: U.S. Geological Survey Professional Paper 919, 70 p.

Cole, J.C., and Cashman, P.H., 1999, Structural relationships of pre-Tertiary rocks in the Nevada Test Site region, southern Nevada: U.S. Geological Survey Professional Paper 1607, 39 p.

Faunt, C.C., D'Agnese, F.A., and O'Brien, G.M., 2004, D. Hydrology, *in* Belcher, W.R., ed., Death Valley regional ground-water flow system, Nevada and California—Hydrogeologic framework and transient ground-water flow model: U.S. Geological Survey Scientific Investigations Report 2004-5205, p. 137-163. On-line at: http://water.usgs.gov/pubs/sir/2004/5205/

Fehner, T.R. and Gosling, F.G., 2000, Origins of the Nevada Test Site: U.S. Department of Energy Report DOE/MA-0518, 95 p.

IT Corporation, 1996a, Underground test area subproject, Phase I, Data analysis task, volume VI—Groundwater flow model data documentation package: Las Vegas, Nev., Report ITLV/10972-181 prepared for the U.S. Department of Energy, 8 volumes, various pagination.

IT Corporation, 1996b, Underground test area subproject, Phase I, Data analysis task, volume I—Geologic model data documentation package: Las Vegas, Nev., Report ITLV/10972-181 prepared for the U.S. Department of Energy, 8 volumes, variously paginated.

Laczniak, R.J., Cole, J.C., Sawyer, D.A., and Trudeau, D.A., 1996, Summary of hydrogeologic controls on ground-water flow at the Nevada Test Site, Nye County, Nevada: U.S. Geological Survey Water-Resources Investigations Report 96-4109, 59 p.

Potter, C.J., Dickerson, R.P., Sweetkind, D.S., Drake II, R.M., Taylor, E.M., Fridrich, C.J., San Juan, C.A., and Day, W.C., 2002, Geologic map of the Yucca Mountain region, Nye County, Nevada: U.S. Geological Survey Geologic Investigations Series Map I-2755, 44 p. text, 2 sheets, scale 1:50,000.

Potter, C.J., Sweetkind, D.S., Dickerson, R.P., and Killgore, M.L., 2001, Hydrostructural map of the Death Valley ground-water basin, Nevada and California: U.S. Geological Survey Miscellaneous Field Studies Map MF-2372, scale 1:350,000, 2 plates with pamphlet. Available online at: http://greenwood.cr.usgs.gov/pub/mf-maps/mf-2372/

Price, C.E., and Thordarson, William, 1961, Ground water test well A, Nevada Test Site, Nye County, Nevada—A summary of lithologic data, aquifer tests, and construction: U.S. Geological Survey Trace Elements Investigations Report 800, 60 p.

Sawyer, D.A., Fleck, R.J., Lanphere, M.A., Warren, R.G., Broxton, D.E., and Hudson, M.R., 1994, Episodic caldera volcanism in the Miocene southwestern Nevada volcanic field—Revised stratigraphic framework, 40AR/39AR geochronology, and implications from magmatism and extension: Geological Society of America Bulletin, v. 106, p. 1304-1318.

Slate, J.L, Berry, M.E., Rowley, P.D., Fridrich, C.J., Morgan, K.S., Workman, J.B., Young, O.D., Dixon, G.L., Williams, V.S., McKee, E.H., Ponce, D.A., Hildenbrand, T.G., Swadley, W.C., Lundstrom, S.C., Ekren, E.B., Warren, R.G., Cole, J.C., Fleck, R.J., Lanphere, M.A., Sawyer, D.A., Minor, S.A., Grunwald, D.J., Laczniak, R.J., Menges, C.M., Yount, J.C., and Jayko, A.S., 2000, Digital geologic map of the Nevada Test Site and vicinity, Nye, Lincoln, and Clark Counties, Nevada, and Inyo County, California: U.S. Geological Survey Open-File Report 99-554-A, 53 p. text, 2 sheets, scale 1:100,000.

Stewart, J.H., 1980, Geology of Nevada – A discussion to accompany the geologic map of Nevada: Nevada Bureau of Mines and Geology Special Publication 4, 136 p.

Sweetkind, D.S., Belcher, W.R., Faunt, C.C., and Potter, C.J., 2004, B. Geology and Hydrogeology, *in* Belcher, W.R., ed., Death Valley regional ground-water flow system, Nevada and California—Hydrogeologic framework and transient ground-water flow model: U.S. Geological Survey Scientific Investigations Report 2004-5205, p. 21-98. On-line at: http://water.usgs.gov/pubs/sir/2004/5205/

U.S. Congress, 1989, The containment of underground nuclear explosions: Office of Technology Assessment, Report OTA-ISC-414, 80 p.

U.S. Department of Energy, 2000, United States Nuclear Tests, July 1945 through September 1992: Nevada Operations Office, Office of External Affairs, Report NVO-209, Revision 15, 162 p.

U.S. Geological Survey, 2005, User's manual for the National Water Information System of the U.S. Geological Survey—Ground-Water Site-Inventory System, version 4.4: U.S. Geological Survey Open-File Report 2005-1251, 274 p.

Warren, R.G, Sawyer, D.A., Byers, F.M., Jr., and Cole, G.L., 2003, A petrographic, geochemical, and geophysical database, and stratigraphic framework for the southwestern Nevada volcanic field: Los Alamos National Laboratory Report LA-UR-03-1503, 54 p. Available online at: http://www.pggdb-swnvf.lanl.gov/

Winograd, I.J., and Thordarson, William, 1975, Hydrogeologic and hydrochemical framework, south-central Great Basin, Nevada-California, with special reference to the Nevada Test Site: U.S. Geological Survey Professional Paper 712-C, 126 p.

Workman, J.B., Menges, C.M., Page, W.R., Taylor, E.M., Ekren, E.B., Rowley, P.D., Dixon, G.L., Thompson, R.A., and Wright, L.A., 2002, Geologic map of the Death Valley ground-water model area, Nevada and California: U.S. Geological Survey Miscellaneous Field Studies Map MF-2381-A, 26 p., 2 sheets, scale 1:250,000.

This page left intentionally blank

Appendixes

The rock-sample, lithologic-description, rock-property, fracture-characteristic, and hydraulic-property databases distributed with this report are Microsoft© Excel spreadsheets and listed in the appendixes A–E. Field-content headings are described in tables A1–E1 and codes are explained in additional worksheets within each spreadsheet. These databases also are distributed as Microsoft© Access tables and listed in appendix F. Field-content headings are described in table F1. Appendixes data are available at URL: http://pubs.usgs.gov/ds/2007/297/.

Appendix A. Rock-Sample Database.

Appendix B. Lithologic-Description Database.

Appendix C. Rock-Property Database

Appendix D. Fracture-Characteristic Database.

Appendix E. Hydraulic-Property Database.

Appendix F. NTS USGS Databases.

This page left intentionally blank

Appendix A. Rock-Sample Database, Nevada Test Site and Vicinity, Nye County, Nevada

Rock-sample data were catalogued for rock samples and thin sections (prepared from rock samples) collected from both underground and surface sites on and around the NTS. Appendix A data are available at URL: http://pubs.usgs.gov/ds/2007/297/.

Table A1. Description of Rock-Sample Database field contents.

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SrtOrdUSGS	USGS NTS sort order	–	Emplacement and exploratory holes typically are displayed together. Many sites also have multiple completion intervals within the same hole. Therefore, a sort order number is assigned to all USGS sites associated with DOE and/or DOD projects in Nevada. This field is modified as new sites are added.	
UnqNoUSGS	USGS NTS unique number	–	Spatial (*X*-*Y*) coordinates are unavailable at some locations. Therefore, USGS site identification numbers cannot be established in the USGS NWIS database Sitefile for these sites. Because NWIS site identification numbers cannot be assigned to all sites, it is necessary to assign a unique site number to all USGS sites associated with USGS DOE/DOD projects in Nevada. Although the unique numbers were initially assigned in the same order as the USGS NTS sort order, new sites are assigned the next available sequential number. Multiple thin section samples at identical UTM coordinates with identical LANL PGG Database loc_ids are assigned a common unique number. Multiple thin section samples at identical UTM coordinates with different LANL PGG Database loc_ids are assigned individual unique numbers. Thin section description from Rick Warren (written commun., Sept. 20, 2008).	
NTSArea	NTS area	–	NTS Administrative Area number (see fig. 1). Entries are listed in **bold** type where sites are located in areas other than the hole name implies. For example, USGS hole name **U - 2bw** is actually located in NTS area **09**.	
HleNmeUSGS	USGS hole name	–	USGS hole name designation. Entries are listed in **bold** type where sites are located in areas other than the hole name implies.	
SmpIntNo	Sample interval number	–	Sequence of sample interval.	
SmpIntSeq	Sample interval sequence number	–	Sequence of samples, when multiple samples are reported within a sample interval.	
SmpIntTopft	Sample interval top (ft)	–	Depth to top of sample interval; in feet below land surface for boreholes and shafts; in feet from portal opening for tunnels and drifts.	
SmpIntBtmft	Sample interval bottom (ft)	–	Depth to bottom of sample interval; in feet below land surface for boreholes and shafts; in feet from portal opening for tunnels and drifts.	

Table A1. Description of Rock-Sample Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
NoSmp	Number of samples	–	Number of samples for rock-sample interval. Sample types (described below) have a direct bearing on number of samples reported. Auger, core, and cuttings samples are treated as continuous and the number of samples is reported as 1 unless auger or cuttings samples are split into separate boxes for various preservation and storage types or adjacent core samples are collected from the same depth interval within a hole. Drill cuttings are normally collected at regular 10-foot intervals throughout the drilling process. However, cuttings may be skipped or may be collected at other intervals. Also, core often is not fully recovered in the drilling process. These gaps in continuity are noted by investigators during sample interpretation and analysis. Normally missing core and cuttings intervals are minimal and not recorded in this table.	
SmpTyp	Sample type	–	Type of sample. Meager field information has been presently accumulated for most thin sections. For such thin sections, sample types with fairly high probability of correctness are followed by a question mark enclosed within parentheses [(?)]. Those with moderate probability of correctness are followed by two question marks enclosed within parentheses [(??)]. Thin section description from Rick Warren, written commun., July 25, 2009.	
SmpTyp	Sample type	Auger	Collected from a screw-like boring tool and normally collected from unconsolidated material. Accuracy is approximate.	
SmpTyp	Sample type	CF	Core, not from interval specified. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	CL	Lithic from core. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	Core	A cylindrical piece of solid rock taken by a special hollow-type drill bit. Cores are usually about 3 inches in diameter and range from a few inches to several feet in length. Thin section sample type is “C” in LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	Core, 12-inch	Core, 12-inch diameter sample.	
SmpTyp	Sample type	Core, 6-inch	Core, 6-inch diameter sample.	
SmpTyp	Sample type	CP	Single pumice from core. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	Cuttings	Rock chips or fragments produced by drilling and brought to the surface. Thin section sample type is “D” in LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	Cuttings, unwashed	Cuttings, unwashed sample. Stored as collected.	
SmpTyp	Sample type	Cuttings, washed	Cuttings, washed sample. Drill cuttings often contain various forms of debris, drilling mud, and other contaminants when collected. Samples are placed in a sieve and rinsed with clear running water in an attempt to remove foreign matter prior to permanent storage.	
SmpTyp	Sample type	DA	Cuttings that represent petrographic character of interval. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/

Table A1. Description of Rock-Sample Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SmpTyp	Sample type	DB1	Cuttings enriched in hard components. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	DB2	Cuttings from interval different than that drilled. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	DB3	Cuttings with combined characters of DB1 and DB2. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	DB4	Cuttings that are intimate mixture of units. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	DL	Separate of lithics from cuttings. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	DM	Separated mineral from cuttings. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	DP	Separate of pumice from cuttings. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	Drill-bit	Drill-bit sample collected by gouging out rock chips or mud from the cutting parts of a drill bit while the bit is out of the hole.	
SmpTyp	Sample type	F	Float. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	Grab	These fist-sized samples come from shafts and tunnels. Samples pried from walls are accurate to about a foot. Samples taken from debris piles are accurate to about 10 ft.	
SmpTyp	Sample type	HL	Lithic from Hunt sidewall. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	HS	Hunt sidewall that represents petrographic character of interval. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	HS1	Hunt sidewall enriched in hard components. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	HW	Hunt sidewall, wallcake agglomerate of cuttings. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	None	No samples.	
SmpTyp	Sample type	O	Outcrop. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	OL	Lithic from outcrop. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	OM	Mineral separate from outcrop. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/

Table A1. Description of Rock-Sample Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SmpTyp	Sample type	OP	Single pumice or bomb from outcrop. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	OPC	Combined pumices from outcrop. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	OPM	Mineral separate from outcropping pumice. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	P	Trench or pit. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	PP	Single pumice or bomb from percussion sidewall. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	PS	Percussion sidewall. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	SC	Sidewall core. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	SH	Shaft wall. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	Sidewall	These finger-sized samples are collected by shooting or drilling a plug of rock from the wall of an uncased hole. Accuracy is about a foot.	
SmpTyp	Sample type	SL	Lithic from sidewall core. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	T	Tunnel wall. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	V	Vertical hole. Thin section sample type taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SmpTyp	Sample type	Wax	Core samples are coated with wax in an attempt to preserve natural-state conditions. Samples are wrapped with heavy gage aluminum foil then dipped in melted bee's wax. Wax is usually built up in several layers to about 1/16 inch.	
SmpOwn	Sample owner	–	These organizations collected and have proprietary interest in the samples. **Each organization must be contacted for permission to view and/or analyze their samples.**	
SmpOwn	Sample owner	DOE	DOE.	
SmpOwn	Sample owner	DOE/NSTec	DOE/National Security Technologies, LLC (NSTec; formerly owned by Bechtel, Nevada (BN); formerly owned by Reynolds Electrical and Engineering Co. (REECo)).	
SmpOwn	Sample owner	DOE/ER	DOE/Environmental Restoration Program (ER).	
SmpOwn	Sample owner	DTRA	DOD, Defense Threat Reduction Agency (DTRA).	
SmpOwn	Sample owner	LANL	Los Alamos National Laboratory (LANL).	

Table A1. Description of Rock-Sample Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SmpOwn	Sample owner	LANL/JVE	LANL/Joint Verification Experiment (JVE).	
SmpOwn	Sample owner	LLNL	Lawrence Livermore National Laboratory (LLNL).	
SmpOwn	Sample owner	LLNL and DTRA	LLNL and DTRA.	
SmpOwn	Sample owner	LLNL/SNL	LLNL/Sandia National Laboratories (SNL).	
SmpOwn	Sample owner	PD	Public Display (PD).	
SmpOwn	Sample owner	USGS	USGS.	
Comments	Comments	–	Comments pertaining to rock-sample interval.	
Comments	Comments	Bottom hole core	A rock chip or core sample taken from bottom of borehole. Used to confirm rock unit where hole bottomed.	
Comments	Comments	Rubber sleeve core	A thick-walled rubber cylinder is used as a “core catcher” to collect unconsolidated material while using a core bit. The rubber sleeve confines the material keeping it in the order collected.	
Comments	Comments	Paleo	Refers to drill cuttings collected for paleontological age dating studies.	
AddSmpCol	Additional sample collection	–	Samples collected following initial drilling or excavation.	
SmpRngTopft	Sample range top (ft)	–	Depth to top of first sample interval; in feet below land surface for boreholes and shafts; in feet from portal opening for tunnels and drifts.	
SmpRngBtmft	Sample range bottom (ft)	–	Depth to bottom of last sample interval; in feet below land surface for boreholes and shafts; in feet from portal opening for tunnels and drifts.	
NoBx	Number of boxes	–	Total number of standard sample boxes for hole. Standard sample box dimensions are 13 inches wide by 2 feet 6 inches deep. Height ranges from 2 1/2 to 3 3/4 inches. Cardboard core-sample liners are 3 inches (4 per standard storage box), 3 1/2 inches (3 per standard storage box), and 5 1/4 inches (2 per standard storage box) in height. Therefore, standard storage box heights can increase to 5 1/2 inches. Most cuttings-sample boxes are 2 1/2 inches wide by 3 7/8 inches deep by 1 3/8 inches high. Standard storage boxes will accommodate 70 cuttings-sample boxes (5 rows by 7 rows, stacked 2 high). Because the majority of cuttings samples are collected every 10 feet, this represents 700 feet of hole. Cuttings-sample boxes used for Environmental Restoration Project (ER) holes are 4 1/4 inches wide by 4 1/4 inches deep by 2 inches high. Standard storage boxes will accommodate 42 ER cuttings-sample boxes (3 rows by 7 rows, stacked 2 high). Furthermore, oversized 6- and 12-inch cores are stored in wooden crates.	
SmpBxNme	Sample box name	–	Name written on sample box located at USGS Core Library in Mercury, Nevada. Entries are listed in **bold** type where sites are located in areas other than the hole name implies.	

Table A1. Description of Rock-Sample Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SmpRkClSh	Sample rack-column-shelf number	–	Samples are stored in two types of storage racks. Rack number 1 was removed, so racks are numbered from 2-99. Open racks are 7 bays high and have bay openings that are 14 inches wide by 18 inches high by 2 feet 6 inches deep to accommodate standard storage boxes. Samples are ordered in bays from left to right as A-Z and AA-RR and from bottom to top as 1-7. Examples of open rack numbers are: 02-A-1 (bottom bay on left side of rack number 2) and 91-RR-6 (bay 6 on right side of rack 91). Most pallet racks are 3 bays high and have bay openings that are 46 inches wide and accommodate 1 pallet containing 3 standard storage boxes side by side. However some pallet racks are 4 bays high and newer pallet racks are 91 inches wide and accommodate 2 pallets containing 6 standard storage boxes side by side. Height ranges from 36-54 inches high and depth is over 5 feet to accommodate 2 pallets (one behind the other). Samples are ordered on pallets in bays from left to right as 1-14 and from bottom to top as A-D. Examples of pallet rack numbers are: 89- 1-A-R (bottom rear bay in bay 1 on left side of rack 89) and 83- 8-D-F (top front bay in bay 8 of rack 83). Furthermore, a few odd sized samples are located on pallets or in wooden crates and stored on the floor at the end of the open or pallet racks. These locations are given an imaginary bay notation. For example rack 14 ends at bay K and rack 85 ends at bay 11. The space between the end of these racks and the building wall is denoted as an additional bay: 14- L-1 or 85-12-A-F.	
SmpPalNo	Sample pallet number	–	Sample pallets are of sufficient width to accommodate 3 standard storage boxes and number of boxes varies by height of bay opening. Samples collected at the Nevada Test Site (NTS) are numbered by Administrative Area Number preceded by an “A” followed by the number of pallets for that area. However, samples collected from tunnels and drifts at Area 12 designate the letter of the particular tunnel following the Administrative Area Number. Samples collected in Nevada, but not at the NTS, are designated as “CNV” (Central Nevada) for samples associated with the Faultless project and by County (Clk, Clark; Nye) for other samples followed by the number of pallets. Samples collected outside Nevada are designated as “AMCH” for samples associated with the Amchitka project in Alaska and by State (Colo, Colorado; MISS, Mississippi; NMex, New Mexico) for other samples followed by the pallet number. Furthermore, a few samples from California, Montana, and New York are simply designated as “basket.”	
SmpBxNo	Sample box number	–	Standard sample boxes are numbered as total per rack bay. The number of storage boxes is normally shown as the total number of standard storage boxes per sample type per hole, but in cases where the storage location is not continuous (usually broken by pallet capacity) the total is shown as the number of boxes on the given pallet or, in a very few cases, storage rack location.	
LocIDLANL	LANL PGG Database loc_id	–	This unique symbol within the LANL PGG database represents a specific, usually unique location on the surface, or a specific, usually unique location within a tunnel. The dash character (-) is reserved for sample IDs and therefore dashes in published locations are converted to a foreslash (/). Thus 11/102/7A is the loc_id for a sample identified by its collector as 11-102-7-A. Description updated from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/

Table A1. Description of Rock-Sample Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SamIDLANL	LANL PGG Database sam_id	–	This unique symbol within the LANL PGG database represents up to a few kilograms of contiguous material from the surface or subsurface. The dash special character (-) designates multiple samples from a single location, and a left parenthesis '(' designates multiple splits from a single sample. Samples from vertical drill holes will always have sam_id's represented by the location, which is the drill hole name, followed by a dash (-) and the sample depth in feet, for example, USWG2-770. Sample depths in meters attach "M" following the metric depth, for example, USWG2-506.65M. Multiple samples from the same location, for example a whole-rock sample and several lithic and pumice separates, will always have sam_id's represented by the location followed by a dash (-) and a character string, for example RW18B3-WR, RW18B3-PU1, and RW18B3-PU2. Description updated from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SplIDLANL	LANL PGG Database spl_id	–	This unique symbol within the LANL PGG database represents a split of a sample for analysis. A split represents analysis for one or more element or component that is performed by a single laboratory. Usually, a few grams are split from the sample and specially prepared for the analytical procedure, such as a glass-covered thin section for petrographic analysis or pulverized rock for chemical analysis. Each thin section and each laboratory's chemical analysis represents a separate split, even if the analyses are performed by different analysts on widely separated dates. Each thin section represents a split, but each batch of sample pulverized for chemical analysis does not. A left parenthesis '(' designates each split from a single sample, such as BH86N/33(B, a polished thin section for sample BH86N/33. Multiple chemical analyses of the same sample by the same laboratory and multiple analyses of the same thin section are considered to represent replicate analyses. To represent split analyses, replicate chemical analyses are averaged, weighted by the inverse square of their analytical uncertainties. Replicate petrographic analyses are ranked; analyses of the same rank are averaged, weighted by the number of points counted. Individual replicate analyses are not stored within the database, but analysts and analytical dates and other information are provided with the analytical data. Description updated from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SplTypCdLANL	LANL PGG Database split_type_code	–	This symbol identifies the type of sample split analyzed within the LANL PGG database. Almost all petrographic analyses employ a glass-covered or a polished thin section. Allowed symbols below represent a partial extract from PGG database table split_type_list. Description updated from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SplTypCdLANL	LANL PGG Database split_type_code	0	None.	
SplTypCdLANL	LANL PGG Database split_type_code	GCTS	Glass-covered thin section.	
SplTypCdLANL	LANL PGG Database split_type_code	PTS	Polished section.	

Table A1. Description of Rock-Sample Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SplTypCdLANL	LANL PGG Database split_type_code	RLS	Reflected light section.	
SplTypCdLANL	LANL PGG Database split_type_code	SEM/PTS	Polished section from scanning electron microscope mount.	
SplTypCdLANL	LANL PGG Database split_type_code	UCTS	Uncovered/unpolished thin section.	
SplTypCdLANL	LANL PGG Database split_type_code	UTS	Unknown type of thin section.	
ThnSecLbl	Thin section label	–	Label permanently inscribed on glass slide. Permanent labels for the great majority of slides are permanently etched, or for a small fraction are inked onto thick paper that is glued on. Unless it is the sole identification on a slide, a label inked directly onto a slide is considered temporary. The comments column provides all inked labels. Note that a label can be affected by breakage of slides and a multitude of inscription errors; the label in this column provides the label read from the slide during inventory. The comments column provides a label corrected for breakage and inscription errors, usually from notes within the thin section box written by the original users of the slide. Description from Rick Warren (written commun., Aug. 31, 2008).	
ThnSecBxID	Thin section box_id	–	Identification number for box containing the glass slide. Almost all boxes are standard for the industry, 9 to 9.5 inches long, 5 to 5.5 inches wide, and approximately 1.3 inches high. Each such box contains 2 columns of 50 slots to accommodate 100 standard glass slides, each 27 mm by 46 mm by 1 mm. A few smaller cardboard boxes contain 25 standard glass slides. A single “box” designates a collection of glass slides or polished thick sections with dimensions different from those of standard glass slides. Some slides with this “box” had been broken and were repaired by gluing a reinforcing glass cover slip or second slide and thus too thick to fit within an individual slot, others were created greatly oversize. Description from Rick Warren (written commun., Aug. 31, 2008).	

Table A1. Description of Rock-Sample Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
ThnSecSlt	Thin section slot	–	Slot within box containing glass slide. To facilitate verification of labels and placement of the slide under a microscope, all slides are oriented in a standard manner. First, the box is oriented like a book to read the thin section box id. The side of the slide that has the rock chip bonded faces towards the top of the box, and the label on the slide faces up or left. Labels for the great majority of slides appear on the side opposite the rock chip, and so will usually face towards the bottom of the box. Description from Rick Warren (written commun., Aug. 31, 2008). Records can have the same slot and box_id. The most common type is for a single thin section divided into sectors that are analyzed separately and thus are different samples. For example, the first multiple records that have the same slot number and box number, GV17A11A1(C, GV17A11A2(B, GV17A11A3(B, GV17A11A4(B, and GV17A11B(2 are layers within a single thin section labeled GV17A11 in slot 53 of box 1. The 4 layers of GV17A11A are alternating layers of andesitic and dacitic ash immediately beneath Rainier Mesa Tuff, and GV17A11B is tuff of Holmes Road beneath the ash layers, all caught in a single thin section. Note that slot 54 represents a second split of GV17A11B, GV17A11B(1. Split GV17A11B(2 was considered too small a sample (86.3 mm^2) to represent this uppermost part of tuff of Holmes Road, and so this second split was cut (353 mm^2). The analyses for the two splits of GV17A11B are provided within the database, and so can be compared or a weighted average calculated. Single thin sections also are divided for separate analysis when a component such as a lithic or pumice is very large. This provides an analysis of the component, and also provides an analysis of the sample free of this exceptionally large component. Thus, thin section RFBHA15 in slot 71 of box 1 provided a large lithic (63.4 mm^2) that was analyzed separately from the matrix of nonwelded tuff; the analytes are RFBHA15-LI1(A and RFBHA15-WR(2. Notice that the lithic portion is designated LI1; another lithic in this thin section is designated LI5. These additional smaller clasts are analyzed as well, data provided within PGG database table ma_clast_measure. Description from Rick Warren (written commun., May 7, 2009).	
ThnSecCom	Thin section comments	–	Comments are taken from sources closely associated with the thin section itself. Most important are notes and comments inscribed within the thin section box. These are usually cryptic due to lack of space, and reproduced as faithfully as legibility allowed. In a very few cases, the original petrographer included a page of notes within the box describing the thin sections. Comments describe conspicuous features such as breaks, fractures, and other types of physical degradation of each slide, and any label additions or modifications made by the original petrographers. Comments also include information from requisition forms for the thin sections where available. Description from Rick Warren (written commun., Aug. 31, 2008).	
SamElvAvLANL	LANL PGG Database sam_elev_av	–	This value provides the sample elevation above mean sea level, or the average from uppermost and lowermost bounds, if available. All values are in feet, but are instead in meters within the LANL PGG database.	http://www.pggdb-swnvf.lanl.gov/

Table A1. Description of Rock-Sample Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SamElvUncLANL	LANL PGG Database sam_elev_unc	–	This value provides the uncertainty for sample elevation, or one-half the difference between uppermost and lowermost bounds, if available. All values are in feet, but are instead in meters within the LANL PGG database. Description updated from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
EntDtLANL	LANL PGG Database entry_date	–	This date indicates the day in which the data entry was created for loading into the LANL database. This entry within the LANL PGG database requires a four-digit year specifier; e.g. 05-JUN-1998. Description updated from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
MapUntSym	Map unit symbol	–	A list of map unit symbols commonly used at the NTS and vicinity are provided. For example: [QTa - middle Pleistocene to late Tertiary alluvial deposits; Tac - Miocene Calico Hills Formation; Tbgr - Tertiary crystal-rich Grouse Canyon Tuff; Tcpk - Tertiary Rhyolite of Kearsarge; TnABCD - Tertiary Tunnel Formation, 4 Member, beds 4A, 4B, 4C, and 4D; Oaa - Ordovician Antelope Valley Limestone, Aysees Peak Member; and Dg - upper and middle Devonian Guilmette Formation]. A complete list of codes is included in the map_unt worksheet in the nts_rck_smp spreadsheet (appendix A).	
RecLoc	Record location	–	Physical location of rock-sample record.	
HleTyp	Hole type	–	Type of vertical or horizontal drilling or excavation.	
HleTyp	Hole type	Borehole	Vertical surface location; includes wells and vertical test holes.	
HleTyp	Hole type	Crater	Vertical surface location.	
HleTyp	Hole type	Drift	Horizontal underground location; includes tunnels and horizontal test holes.	
HleTyp	Hole type	Multiple Wells	Multiple wells.	
HleTyp	Hole type	Outcrop	Surface location.	
HleTyp	Hole type	Shaft	Vertical surface location.	
HleTyp	Hole type	Spring	Spring.	
HleTyp	Hole type	Streambed	Streambed.	
HleTyp	Hole type	Surface	Surface location.	
HleTyp	Hole type	Trench	Horizontal surface location.	
HleTyp	Hole type	Unknown	Hole type not known.	
TnlDftConSta	Tunnel or drift construction station	–	Construction station at collar location (portal opening), for tunnels and drifts (i.e. - 9+17 is 917 ft; 10+72,195’ is a 195 ft hole at the 1,072 ft station; etc.).	
ConStaRmk	Construction station remarks	–	Remarks concerning the portal opening (collar location), for tunnels and drifts (i.e. - In U-12e.14 main drift; Alcove; Face; Invert; Lft Rib; Rt Rib; etc.).	
NVSPE27	Nevada SPCS Easting NAD27	–	Nevada State plane coordinates (SPCS), Easting, central zone, in feet; North American Datum of 1927 (NAD27).	

Table A1. Description of Rock-Sample Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
NVSPN27	Nevada SPCS Northing NAD27	–	Nevada State plane coordinates (SPCS), Northing, central zone, in feet; North American Datum of 1927 (NAD27).	
NVSPErr	SPCS error	–	SPCS error, in feet. Blank if unknown.	
AltPorOpn29ft	Altitude at portal opening NGVD29 (ft)	–	Altitude at the collar location of the portal opening, for tunnels and drifts; in feet above mean sea level; National Geodetic Vertical Datum of 1929 (NGVD29).	
BngPorOpnDeg	Bearing from portal opening (degrees)	–	Bearing from the portal opening, for tunnels and drifts; in degrees, minutes, and seconds or decimal degrees (i.e. - S0720958W is South, 72 degrees, 9 minutes, 58 seconds West; N0325529E is North, 32 degrees, 55 minutes, 29 seconds East; N052.75W is North 52 and three-quarter degrees West; etc.)	
IncPorOpnDeg	Inclination from portal opening (degrees)	–	Inclination from the portal opening, for tunnels and drifts; in degrees, minutes, and seconds or decimal degrees (i.e. - 0045825 is a hole 4 degrees, 58 minutes, 25 seconds above horizontal; 2700000 is a vertical hole below horizontal; 0900000 is a vertical hole above horizontal; 0000000 and 1800000 are horizontal holes; 0150000 and 1650000 are holes 15 degrees up (above horizontal); 3150000 and 2250000 are holes 45 degrees down (below horizontal); 356.5 is a hole 3 and one-half degrees below horizontal; 170.25 is 9 and three-quarter degrees above horizontal; etc.). Inclinations are linked to bearings, so values near horizontal for holes bearing north or east would be added to zero for holes inclined above horizontal and subtracted from 360 for holes below horizontal; conversely, values near horizontal for holes bearing south or west would be subtracted from 180 for holes inclined above horizontal and added to 180 for holes below horizontal.	
AltLndSur29ft	Altitude of land surface NGVD29 (ft)	–	Altitude of land surface within a reasonable proximity of the site; in feet above mean sea level; National Geodetic Vertical Datum of 1929 (NGVD29). This is an average of the surrounding ground-surface elevation. If the original surface has been altered, estimate the altitude based on nearby unaltered terrain.	
AltMth	Altitude method	–	Method used to determine altitude of land surface.	
AltMth	Altitude method	A	Altimeter.	
AltMth	Altitude method	D	Differentially corrected Global Positioning System (DGPS).	
AltMth	Altitude method	G	Global Positioning System (GPS).	
AltMth	Altitude method	I	Interferometric Synthetic Aperture Radar (IfSAR), airplane.	
AltMth	Altitude method	J	Light Detection And Ranging (LiDAR), airplane.	
AltMth	Altitude method	L	Level or other surveying method.	
AltMth	Altitude method	M	Interpolated from topographic map [report accuracy as ± one-half the contour interval (or supplementary contour interval) specified on the quadrangle].	
AltMth	Altitude method	N	Interpolated from digital elevation model (DEM).	
AltMth	Altitude method	R	Reported.	

Table A1. Description of Rock-Sample Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
AltMth	Altitude method	U	Unknown.	
AltAcc	Altitude accuracy	–	Altitude accuracy; in feet (decimal values for accuracies less than 1 ft).	
AltAcc	Altitude accuracy	U	Unknown.	
SitCmpDt	Site completion date	–	Date hole construction completed.	
HleDthft	Hole depth (ft)	–	Hole depth; in feet below land surface for boreholes and shafts; in feet from portal opening for tunnels and drifts.	
RedBkHleNo	Redbook hole number	–	Redbook hole numbers are currently assigned to new holes completed at the NTS by National Security Technologies, LLC (NSTec). Entries are listed in **bold** type where sites are located in areas other than the hole name implies.	
RedBkHleNo	Redbook hole number	–	Redbook hole numbers listed in the Raytheon Services Nevada (RSN) Nevada Test Site Drilling and Mining Summary (last updated 12-31-90) and previously in the Fenix and Scisson of Nevada NTS Drilling and Mining Summary (last updated 6-30-89; formerly Fenix and Scisson, Inc.) were assigned according to the type of hole drilled or mined, site location (NTS area), and sequence code for the consecutive order in which the hole was drilled, mined, or recompleted. Emplacement holes for nuclear weapons tests begin with the letter U, followed by a dash (-), NTS area number (fig. 1), and sequence code (letters a-z, aa-az, ba-bz, …, za-zz). Exploratory holes follow the same naming convention as emplacement holes, but begin with the letters UE. Holes that begin with the letter U but were drilled or mined specifically to provide data that could not be collected from an emplacement hole follow the emplacement hole naming convention, but are assigned incremental letters or numbers, or both following the sequence code. The suffix letters indicate: [#, satellite hole; CH, cable hole; Ex. or Expl., exploratory hole; HTH, hydrologic test hole; Inst., instrument hole; ITS, integrated test system; PPS, pre-postshot hole; PS, post-shot hole; RNM, radionuclide migration hole; RWMS, radioactive waste management site; and S, substitute hole]. There are numerous exceptions to the standard naming convention. The prefix letters indicate: [HTH, hydrologic test hole; J, Jackass Flat; and RNM radionuclide migration]. Numbers and letters following the dash in the exceptions represent sequence of site drilling or mining, not NTS location. Hole type also is commonly listed after the hole designation. For example: [Access Shaft; Cable Hole; Expl. Hole; Instrument; LOS (Line Of Sight) Drift; Sidetrack; Reentry Mining; Tunnel; Vent Hole; and Zero Station].	
RedBkHleNo	Redbook hole number	–	USGS DOE project-related holes in Central Nevada follow a similar naming convention. However, emplacement holes begin with the letters UC and exploratory holes begin with the letters UCE.	
RedBkHleNo	Redbook hole number	–	USGS Yucca Mountain Project (YMP) holes at the NTS follow the exploratory hole naming convention. Offsite YMP holes begin with the letters USW to indicate underground southern Nevada waste. The suffix letters indicate: [G, geologic hole; GA, geologic angle hole; GU, geologic unsaturated zone hole; H, hydrologic hole; MX, missile-experimental hole (drilled for U.S. Air Force [USAF] MX Missile-Siting Investigation); N, neutron hole; p, Paleozoic or pre-Tertiary hole; RF, repository facility hole; UZ, unsaturated zone hole; V, volcanic hole; VSE, vertical shelter exploratory hole (drilled for USAF MX Missile-Siting Investigation); and WT, water table hole].	

Table A1. Description of Rock-Sample Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
RedBkHleNo	Redbook hole number	–	Environmental Restoration Program (ERP) holes at the NTS begin with the letters ER, followed by a dash, NTS area number (fig. 1), a dash, and an incremental sequence number. The NTS area number is replaced by suffix letters for ERP holes located offsite. The suffix letters indicate: [EC, area at the USAF Nellis Air Force Base Range (NAFBR) where the holes were drilled; and OV, Oasis Valley].	
RedBkHleNo	Redbook hole number	–	LLNL Containment Program Data Base hole names are 10 characters in length. The first character identifies the site location of the hole: [U, Nevada Test Site; C, Central Nevada Test Site; A, Amchitka Test Site; and O, offsite hole]. The second and third characters identify either the right-justified Area number for an NTS hole, or the two-letter State abbreviation (U.S. Postal Service abbreviation) for an offsite hole: [U 2, NTS hole in Area 2; U20, NTS hole in Area 20; and ONV, offsite hole in Nevada]. The fourth character is reserved for specially defined areas at the NTS: [U 9I, NTS hole in Area 9, in the ITS area]. Characters 5-10 identify the hole complex or group of holes (of different types) related to the emplacement hole. This may include letters or numbers. For an NTS hole, the fifth and sixth characters are alphabetical descriptors and usually complete the common hole name for an emplacement hole: [U 2 c, NTS hole in Area 2; U 2 ca, NTS hole in Area 2, drilled after U 2 c; and U 2 cb, NTS hole in Area 2, drilled after U 2 ca]. For offsite holes, these characters will indicate county name, on a limited space basis: [ONV NYE, offsite hole in Nevada, Nye County; and OCO RBL, offsite hole in Colorado, Rio Blanco County]. These characters also may indicate project identifiers: [U 1 RNM, NTS hole in Area 1, Radionuclide Migration Program; and U 12 ER, NTS hole in Area 12, Environmental Restoration Program]. LLNL Containment Program Data Base hole types are: [A, access; B, rad chem; C, core; D, Waterways experiment Station (WES); E, exploratory; F, tunnel; G, auger, crack investigation; H, emplacement (H A or H B is a centerpunch emplacement hole); I, instrument; J, PINEX or LOS; K, escape; L, cable; M, hydrologic test hole; N, tracer and sample, foil recovery; O, tunnel dynamics; P, post test; Q, seismic, high explosive; R, re-entry (R-S is a reentry shaft); S, shaft (W/S is a whipstock hole); T, test hole (many types); U, post-test hole, in crater; V, vent; W, water supply; X, pre-post test; Y, abandoned; Z, waste storage; 1, rack assembly; 2, dump; 3, oil well; 4, gas well; 5, geothermal well; and ?, unknown hole type]. Multiple uses of a hole are indicated by consecutively adding hole type abbreviations in this field. If the hole is closely associated with another hole, or if it also is known by another name, this is indicated by /____. For example, the hole name: [U 2 bt HE/U2BU H] means that U 2 bt was initially an emplacement hole that became an exploratory hole. U 2 bt also is an exploratory hole for the nearby emplacement hole U 2 bu.	
FmrOthHleNme	Former or other hole name	–	Former or other names utilized for holes.	
AgyCdUSGSNWIS	NWIS agency code	USGS	USGS NWIS code to indicate the reporting agency. All sites currently populated in the rock-sample database are assigned as USGS.	
SitIDNoUSGSNWIS	NWIS site identification number	–	USGS NWIS site identification number.	

Table A1. Description of Rock-Sample Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SitIDNoUSGSNWIS	NWIS site identification number	–	Downstream order numbers are assigned for surface-water, on-stream, sites. The first two digits of the station number indicate the part or major drainage system formerly used for USGS Water-Supply Papers entitled “Surface Water Supply of the United States” and the remaining digits indicate the downstream order within the part. This site number is left-justified. Although downstream identification numbers have been converted to a variable length format, with up to 14 digits available, 8 digits are normally assigned.	
SitIDNoUSGSNWIS	NWIS site identification number	–	Numbering system for sites on open water bodies, off-channel sites, wells, springs, etc., is based on the grid system of latitude and longitude. Although this number is initially determined from the best known latitude/longitude location, plus a 2-digit sequence number for the number of sites located at those coordinates, it retains no locational relevance once the site is created in the database. The overall designation consists of 15 digits. The values of latitude and longitude are updated as better coordinates become available, and should always be used for locating sites or plotting locations.	
Lat27	Latitude NAD27	–	Latitude; in degrees, minutes, and seconds [two digits are available for decimal seconds]; North American Datum of 1927 (NAD27).	
Lng27	Longitude NAD27	–	Longitude; in degrees, minutes, and seconds [two digits are available for decimal seconds]; North American Datum of 1927 (NAD27).	
LocMth	Location method	–	Method used to determine latitude and longitude coordinates.	
LocMth	Location method	A	Approximate: location estimated long after sampling. Thin section location method taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
LocMth	Location method	B	Digitized from master map, generally stable base. Thin section location method is "S" in LANL Report LA-UR-03-1503 (2003); description taken from report.	http://www.pggdb-swnvf.lanl.gov/
LocMth	Location method	C	Calculated from land net.	
LocMth	Location method	D	Differentially corrected Global Positioning System (DGPS).	
LocMth	Location method	F	Digitized from field map. Thin section location method is "D" in LANL Report LA-UR-03-1503 (2003); description taken from report.	http://www.pggdb-swnvf.lanl.gov/
LocMth	Location method	G	Global positioning system (GPS), uncorrected [Standard Positioning Service (SPS) and Precise Positioning Service (PPS)].	
LocMth	Location method	H	Hand-calculated from location plotted during sampling. Thin section location method taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
LocMth	Location method	L	Long-range navigation (Loran) system.	
LocMth	Location method	M	Interpolated from map.	
LocMth	Location method	N	Interpolated from digital map.	
LocMth	Location method	P	Published. Thin section location method taken from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
LocMth	Location method	R	Reported.	

Table A1. Description of Rock-Sample Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
LocMth	Location method	S	Transit, theodolite, or other surveying method. Thin section location method is “M” in LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
LocMth	Location method	T	Specific location within 7.5' (1:24,000 scale) topographic quadrangle unknown. Thin section location method is "N" in LANL Report LA-UR-03-1503 (2003); description taken from report.	http://www.pggdb-swnvf.lanl.gov/
LocMth	Location method	U	Unknown. Thin section location method is “0” in LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
LocAcc	Location accuracy	–	Accuracy of latitude and longitude coordinates.	
LocAcc	Location accuracy	H	Hundredth second.	
LocAcc	Location accuracy	1	Tenth second.	
LocAcc	Location accuracy	5	Half second.	
LocAcc	Location accuracy	S	Second.	
LocAcc	Location accuracy	R	Three seconds.	
LocAcc	Location accuracy	F	Five seconds.	
LocAcc	Location accuracy	T	Ten seconds.	
LocAcc	Location accuracy	M	Minute.	
LocAcc	Location accuracy	U	Unknown.	
DecLat83	Decimal latitude NAD83	–	Latitude, in decimal degrees [automatically generated by the NWIS system software]; North American Datum of 1983 (NAD83).	
DecLng83	Decimal longitude NAD83	–	Longitude, in decimal degrees [automatically generated by NWIS system software]; North American Datum of 1983 (NAD83).	
UTME27m	UTM Easting NAD27 (meters)	–	Universal Transverse Mercator coordinates, Easting, zone 11, in meters; North American Datum of 1927 (NAD27).	
UTMN27m	UTM Northing NAD27 (meters)	–	Universal Transverse Mercator coordinates, Northing, zone 11, in meters; North American Datum of 1927 (NAD27).	
UTMErr	UTM error	–	UTM error, in meters. Blank if unknown. [This value within the LANL PGG database is the combined uncertainty in meters for easting and northing. Thin section UTM error updated from LANL Report LA-UR-03-1503 (2003)].	http://www.pggdb-swnvf.lanl.gov/
Rmk	Remarks	–	Pertinent remarks pertaining to the rock sample.	
DtRcdLstUpd	Date record last updated	–	Date of data entry (compiled into electronic format) is listed if a row of record has not been modified. The date of last (most recent) update is listed if a row of record has been modified. This date does not indicate which columns of data have been modified; only that records have been updated within a particular row. Dates are listed as yyyymmdd (4-digit year; 2-digit month; 2-digit day).	
URLAdr	URL address	–	Link to online website and database.	

This page left intentionally blank

Appendix B. Lithologic-Description Database, Nevada Test Site and Vicinity, Nye County, Nevada

Lithologic-description data were compiled for both underground and surface sites located on and around the NTS. Appendix B data are available at URL: http://pubs.usgs.gov/ds/2007/297/.

Table B1. Description of Lithologic-Description Database field contents.

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SrtOrdUSGS	USGS NTS sort order	–	Emplacement and exploratory holes typically are displayed together. Many sites also have multiple completion intervals within the same hole. Therefore, a sort order number is assigned to all USGS sites associated with DOE and/or DOD projects in Nevada. This field is modified as new sites are added.	
UnqNoUSGS	USGS NTS unique number	–	Spatial (*X*-*Y*) coordinates are unavailable at some locations. Therefore, USGS site identification numbers cannot be established in the USGS NWIS database Sitefile for these sites. Because NWIS site identification numbers cannot be assigned to all sites, it is necessary to assign a unique site number to all USGS sites associated with USGS DOE/DOD projects in Nevada. Although the unique numbers were initially assigned in the same order as the USGS NTS sort order, new sites are assigned the next available sequential number.	
NTSArea	NTS area	–	NTS Administrative Area number (see fig. 1). Entries are listed in **bold** type where sites are located in areas other than the hole name implies. For example, USGS hole name **UE-17c Eleana** is actually located in NTS area **04**.	
HleNmeUSGS	USGS hole name	–	USGS hole name designation. Entries are listed in **bold** type where sites are located in areas other than the hole name implies.	
LthIntNo	Lithologic interval number	–	Sequence of lithologic interval.	
LthIntSeq	Lithologic interval sequence number	–	Sequence of descriptions, when multiple descriptions are reported within a lithologic interval.	
LthIntTopft	Lithologic interval top (ft)	–	Depth to top of lithologic interval; in feet below land surface for boreholes and shafts; in feet from portal opening for tunnels and drifts.	
LthIntBtmft	Lithologic interval bottom (ft)	–	Depth to bottom of lithologic interval; in feet below land surface for boreholes and shafts; in feet from portal opening for tunnels and drifts.	
SmpLogTyp	Sample or log type	–	Type of sample or log that lithologic description is based upon.	
SmpLogTyp	Sample or log type	Basket	–	
SmpLogTyp	Sample or log type	Binocular microscope	–	

Table B1. Description of Lithologic-Description Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SmpLogTyp	Sample or log type	Bit	–	
SmpLogTyp	Sample or log type	Core	–	
SmpLogTyp	Sample or log type	Core and Cuttings	–	
SmpLogTyp	Sample or log type	Core and Geophysical log	–	
SmpLogTyp	Sample or log type	Core and Movie log	–	
SmpLogTyp	Sample or log type	Core and Sidewall	–	
SmpLogTyp	Sample or log type	Core, Sidewall, and Cuttings	–	
SmpLogTyp	Sample or log type	Cuttings	–	
SmpLogTyp	Sample or log type	Cuttings and Geophysical log	–	
SmpLogTyp	Sample or log type	Cuttings and Movie log	–	
SmpLogTyp	Sample or log type	Field notes	–	
SmpLogTyp	Sample or log type	Geophysical log	–	
SmpLogTyp	Sample or log type	Grab	–	
SmpLogTyp	Sample or log type	Movie log	–	
SmpLogTyp	Sample or log type	None	–	
SmpLogTyp	Sample or log type	Sidewall	–	
SmpLogTyp	Sample or log type	Sidewall & Cuttings	–	
SmpLogTyp	Sample or log type	Sidewall & Geophysical log	–	
SmpLogTyp	Sample or log type	Sidewall & Movie log	–	
SmpLogTyp	Sample or log type	Thin section	–	

Table B1. Description of Lithologic-Description Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SmpLogTyp	Sample or log type	Unknown	–	
LthDsc	Lithologic description	–	Entire lithologic description verbatim. The intent is to offer the most comprehensive (usually the original) description available. Core and sidewall samples always take precedence over cuttings descriptions. Multiple descriptions exist for many holes. However, subsequent descriptions are abridged and important alteration and structural inferences are lost. Although stratigraphic units are frequently updated and lithologies are occasionally modified, original descriptions still take precedence because cuttings samples were interpreted with the aid of binocular microscopes and questionable core samples were interpreted from thin sections utilizing petrographic microscopes (and occasionally spectrographic analysis).	
GeoUntUSGSNWIS	USGS NWIS geologic unit	–	Geologic unit or aquifer name code stored in the Ground-Water Information System (GWSI) subsystem of the USGS NWIS Ingress database. For example: [110VLFL - Quaternary valley fill; 121AMTK - Tertiary Ammonia Tanks Member; 121RRMS - Tertiary Rainier Mesa Member; 122PBRS - Tertiary Paintbrush Tuff; 327ELEN - Pennsylvanian Eleana Formation; 331CNMN - Mississippian Chainman Shale; 344NEVD - Devonian Nevada Formation; 361EURK - Ordovician Eureka Quartzite; and 400SRLG - Precambrian Stirling Quartzite]. A complete list of codes is included in the nv_geo_unt worksheet in the nts_lth_dsc spreadsheet (appendix B).	
LthUntUSGSNWIS	USGS NWIS lithologic unit	–	Lithologic unit code stored in the GWSI database. For example: [ALVM - alluvium; CLAY - clay; DLMT - dolomite; GRVL - gravel; LMSN - limestone; QRTZ - quartzite; SAND - sand; SHLE - shale; and TUFF - tuff]. A complete list of codes is included in the lith_unt worksheet in the nts_lth_dsc spreadsheet (appendix B).	
CntUntUSGSNWIS	USGS NWIS contributing unit	–	Contributing unit code stored in the GWSI database.	
CntUntUSGSNWIS	USGS NWIS contributing unit	N	Contributes no water.	
CntUntUSGSNWIS	USGS NWIS contributing unit	P	Principal contributing aquifer (only one per site).	
CntUntUSGSNWIS	USGS NWIS contributing unit	Q	Aggregate of lithologic units.	
CntUntUSGSNWIS	USGS NWIS contributing unit	S	Secondary contributing aquifer.	
CntUntUSGSNWIS	USGS NWIS contributing unit	U	Unknown contribution.	

Table B1. Description of Lithologic-Description Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
MapUntSym	Map unit symbol	–	A list of map unit symbols commonly used at the NTS and vicinity are provided. For example: [QTa - middle Pleistocene to late Tertiary alluvial deposits; Tac - Miocene Calico Hills Formation; Tbgr - Tertiary crystal-rich Grouse Canyon Tuff; Tcpk - Tertiary Rhyolite of Kearsarge; TnABCD - Tertiary Tunnel Formation, 4 Member, beds 4A, 4B, 4C, and 4D; Oaa - Ordovician Antelope Valley Limestone, Aysees Peak Member; and Dg - upper and middle Devonian Guilmette Formation]. A complete list of codes is included in the map_unt worksheet in the nts_lith_dsc spreadsheet (appendix B).	
LthGrp	Lithologic group	–	A list of one-three character codes is provided to specify general rock types. For example: [Iim - igneous, intrusive, mafic; Sc - sedimentary, consolidated; and M - Metamorphic]. A complete list of codes is included in the lith_grp worksheet in the nts_lith_dsc spreadsheet (appendix B).	
LthDscUnt	Lithologic description unit	–	A list of three-character codes and modifiers are provided to specify detailed descriptions or subdivisions of lithologic units. Codes are restricted to important features and added by significance (usually order listed). Modifier usage is also minimized because fields are parsed to construct graphical plots. One- to two-character codes are followed by one or two spaces to maintain the three-character length. For example: [air - air-fall/ash-fall tuff; ash - ash-flow tuff; bed - bedded tuff; dwt - densely welded tuff; fls - felsite; nwt - nonwelded tuff; lac - lacustrine deposits; pd - playa deposits; pum - pumice; and vtp - vitrophyre]. A complete list of codes is included in the lith_dsc worksheet in the nts_lth_dsc spreadsheet (appendix B).	
LthChrUnt	Lithologic characteristics unit	–	A list of three-character codes and modifiers are provided to specify diagnostic features of lithologic units. Codes are restricted to important features and added by significance (usually order listed). Modifier usage is also minimized because fields are parsed to construct graphical plots. One- to two-character codes are followed by one or two spaces to maintain the three-character length. For example: [arz - argillaceous; chl - chloritic; dvt - devitrified; fct - fractured; hxt - holocrystalline; ind - indurated; mrd - mordenite; Ol - Olivine; slc - silicic; vit - vitric; and zeo - zeolitic]. A complete list of codes is included in the lith_chr worksheet in the nts_lth_dsc spreadsheet (appendix B).	
LthHydUnt	Lithohydrologic unit	–	A list of codes is provided to specify general terms for aquifers or confining units. For example: [lcA - lower-carbonate aquifer; lclCU - lower-clastic confining unit; uclCU - upper-clastic confining unit; vA - volcanic aquifer; vCU - volcanic confining unit; and vfA - valley-fill aquifer]. A complete list of codes is included in the lith_hyd_unt worksheet in the nts_lth_dsc spreadsheet (appendix B).	
LthRmk	Lithologic remarks	–	Comments pertaining to lithologic-interval descriptions. Currently used mostly to house stratigraphic/lithologic references included with written descriptions; these data are utilized as an aid for populating the USGS NWIS geologic unit, USGS NWIS lithologic unit, USGS NWIS contributing unit, Map unit symbol, Lithologic description unit, Lithologic characteristics unit, and Lithohydrologic unit fields.	

Table B1. Description of Lithologic-Description Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
OFROrdUSGS97139	USGS Open-File Report 97-139 order	–	Numerical order site is listed in USGS Open-File Report 97-139.	
OFRHleIDUSGS97139	USGS Open-File Report 97-139 Hole ID	–	Hole name listed in USGS Open-File Report 97-139. Entries are listed in **bold** type where sites are located in areas other than the hole name implies.	
DatSrc	Data source	–	Agency that reported lithologic-description data.	
DatSrc	Data source	AML	Analytical Materials Laboratory (AML), 3463 State Street, #349, Santa Barbara, California.	
DatSrc	Data source	BN	Bechtel Nevada (BN).	
DatSrc	Data source	DTRA	DOD, Defense Threat Reduction Agency (DTRA).	
DatSrc	Data source	F&S	Fenix and Scisson, Inc. (F&S).	
DatSrc	Data source	FSN	Fenix and Scisson of Nevada (FSN).	
DatSrc	Data source	IT Corp.	International Technology Corporation (IT Corp., purchased by Shaw Group, Inc.).	
DatSrc	Data source	LANL	Los Alamos National Laboratory (LANL).	
DatSrc	Data source	LLNL	Lawrence Livermore National Laboratory (LLNL).	
DatSrc	Data source	NDWR	State of Nevada, Department of Conservation and Natural Resources, Division of Water Resources (State Engineer).	
DatSrc	Data source	NSTec	National Security Technologies, LLC (NSTec).	
DatSrc	Data source	RSN	Raytheon Services Nevada (RSN).	
DatSrc	Data source	SNJV	Stoller-Navarro Joint Venture (SNJV).	
DatSrc	Data source	USGS	USGS.	
RcdTypDsc	Record type or description	–	Record description and/or document type.	
RcdTypDsc	Record type or description	BN/PF	Bechtel Nevada (BN) Project Files (PF).	
RcdTypDsc	Record type or description	DTRA/PF	DOD, Defense Threat Reduction Agency (DTRA) Project Files (PF).	
RcdTypDsc	Record type or description	F&S/PF	Fenix and Scisson, Inc. (F&S) Project Files (PF).	
RcdTypDsc	Record type or description	FSN/PF	Fenix and Scisson of Nevada (FSN) Project Files (PF).	
RcdTypDsc	Record type or description	IT Corp./PF	International Technology Corporation (IT Corp.) Project Files (PF).	

Table B1. Description of Lithologic-Description Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
RcdTypDsc	Record type or description	LANL/PF	Los Alamos National Laboratory (LANL) Project Files (PF); referred to as “Blue Folders.”	
RcdTypDsc	Record type or description	LLNL/PF	Lawrence Livermore National Laboratory (LLNL) Project Files (PF).	
RcdTypDsc	Record type or description	NDWR/WDR	State of Nevada, Division of Water Resources, Well Driller's Report (Well Log).	
RcdTypDsc	Record type or description	NSTec/PF	National Security Technologies, LLC. (NSTec) Project Files (PF).	
RcdTypDsc	Record type or description	RSN/PF	Raytheon Services Nevada (RSN) Project Files (PF).	
RcdTypDsc	Record type or description	SNJV/PF	Stoller-Navarro Joint Venture (SNJV) Project Files (PF).	
RcdTypDsc	Record type or description	USGS/PF	USGS Project Files (PF).	
RptRef	Report reference	–	Published report that contains lithologic-description data. A complete list of acronyms and abbreviations used in USGS and other reports is included in the usgs_rpt and nts_acr_abv worksheets in the nts_lth_dsc spreadsheet (appendix B). **NOTE: [USGS Technical Letters are considered internal correspondence and are not available for public release unless the report has been assigned a USGS Open-File Report number. Technical Letters prepared under the USGS Hydrologic Resource Management Program (HRMP, formerly Hydrology/ Radionuclide Migration Program) and assigned “blanket open-file status” are designated “USGS-474-number.” Technical Letters prepared under the USGS Yucca Mountain Program (YMP) and assigned “blanket open-file status” are designated “USGS-1543-number.” Furthermore, some reports prepared by the National Laboratories and the various DOE and DOD subcontractors also may be considered internal correspondence and not available for public release. Users interested in these reports must check with the source agency to determine availability.]**	
Invst	Investigators	–	Authors and/or investigators.	
LocIDLANL	LANL PGG Database loc_id	–	This unique symbol within the LANL PGG database represents a specific, usually unique location on the surface, or a specific, usually unique location within a tunnel. The dash character (-) is reserved for sample IDs and therefore dashes in published locations are converted to a foreslash (/). Thus 11/102/7A is the loc_id for a sample identified by its collector as 11-102-7-A. Description updated from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/

Table B1. Description of Lithologic-Description Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SamIDLANL	LANL PGG Database sam_id	–	This unique symbol within the LANL PGG database represents up to a few kilograms of contiguous material from the surface or subsurface. The dash special character (-) designates multiple samples from a single location, and a left parenthesis '(' designates multiple splits from a single sample. Samples from vertical drill holes will always have sam_id's represented by the location, which is the drill hole name, followed by a dash (-) and the sample depth in feet, for example, USWG2-770. Sample depths in meters attach "M" following the metric depth, for example, USWG2-506.65M. Multiple samples from the same location, for example a whole-rock sample and several lithic and pumice separates, will always have sam_id's represented by the location followed by a dash (-) and a character string, for example RW18B3-WR, RW18B3-PU1, and RW18B3-PU2. Description updated from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SplIDLANL	LANL PGG Database spl_id	–	This unique symbol within the LANL PGG database represents a split of a sample for analysis. A split represents analysis for one or more element or component that is performed by a single laboratory. Usually, a few grams are split from the sample and specially prepared for the analytical procedure, such as a glass-covered thin section for petrographic analysis or pulverized rock for chemical analysis. Each thin section and each laboratory's chemical analysis represents a separate split, even if the analyses are performed by different analysts on widely separated dates. Each thin section represents a split, but each batch of sample pulverized for chemical analysis does not. A left parenthesis '(' designates each split from a single sample, such as BH86N/33(B, a polished thin section for sample BH86N/33. Multiple chemical analyses of the same sample by the same laboratory and multiple analyses of the same thin section are considered to represent replicate analyses. To represent split analyses, replicate chemical analyses are averaged, weighted by the inverse square of their analytical uncertainties. Replicate petrographic analyses are ranked; analyses of the same rank are averaged, weighted by the number of points counted. Individual replicate analyses are not stored within the database, but analysts and analytical dates and other information are provided with the analytical data. Description updated from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
RecLoc	Record location	–	Physical location of lithologic-description record.	
HleTyp	Hole type	–	Type of vertical or horizontal drilling or excavation.	
HleTyp	Hole type	Borehole	Vertical surface location; includes wells and vertical test holes.	
HleTyp	Hole type	Crater	Vertical surface location.	
HleTyp	Hole type	Drift	Horizontal underground location; includes tunnels and horizontal test holes.	
HleTyp	Hole type	Multiple wells	Multiple wells.	
HleTyp	Hole type	Outcrop	Surface location.	
HleTyp	Hole type	Shaft	Vertical surface location.	
HleTyp	Hole type	Spring	Spring.	
HleType	Hole type	Streambed	Streambed.	

Table B1. Description of Lithologic-Description Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
HleTyp	Hole type	Surface	Surface location.	
HleTyp	Hole type	Trench	Horizontal surface location.	
HleTyp	Hole type	Unknown	Hole type not known.	
TnlDftConSta	Tunnel or drift construction station	–	Construction station at collar location (portal opening), for tunnels and drifts (i.e. - 9+17 is 917 ft; 10+72,195' is a 195 ft hole at the 1,072 ft station; etc.).	
ConStaRmk	Construction station remarks	–	Remarks concerning the portal opening (collar location), for tunnels and drifts (i.e. - In U-12e.14 main drift; Alcove; Face; Invert; Lft Rib; Rt Rib; etc.).	
NVSPE27	Nevada SPCS Easting NAD27	–	Nevada state plane coordinates (SPCS), Easting, central zone, in feet; North American Datum of 1927 (NAD27).	
NVSPN27	Nevada SPCS Northing NAD27	–	Nevada state plane coordinates (SPCS), Northing, central zone, in feet; North American Datum of 1927 (NAD27).	
NVSPErr	SPCS error	–	SPCS error, in feet. Blank if unknown.	
AltPorOpn29ft	Altitude at portal opening NGVD29 (ft)	–	Altitude at the collar location of the portal opening, for tunnels and drifts; in feet above mean sea level; National Geodetic Vertical Datum of 1929 (NGVD29).	
BngPorOpnDeg	Bearing from portal opening (degrees)	–	Bearing from the portal opening, for tunnels and drifts; in degrees, minutes, and seconds or decimal degrees (i.e. - S0720958W is South, 72 degrees, 9 minutes, 58 seconds West; N0325529E is North, 32 degrees, 55 minutes, 29 seconds East; N052.75W is North 52 and three-quarter degrees West; etc.)	
IncPorOpnDeg	Inclination from portal opening (degrees)	–	Inclination from the portal opening, for tunnels and drifts; in degrees, minutes, and seconds or decimal degrees (i.e. - 0045825 is a hole 4 degrees, 58 minutes, 25 seconds above horizontal; 2700000 is a vertical hole below horizontal; 0900000 is a vertical hole above horizontal; 0000000 and 1800000 are horizontal holes; 0150000 and 1650000 are holes 15 degrees up (above horizontal); 3150000 and 2250000 are holes 45 degrees down (below horizontal); 356.5 is a hole 3 and one-half degrees below horizontal; 170.25 is 9 and three-quarter degrees above horizontal; etc.). Inclinations are linked to bearings, so values near horizontal for holes bearing north or east would be added to zero for holes inclined above horizontal and subtracted from 360 for holes below horizontal; conversely, values near horizontal for holes bearing south or west would be subtracted from 180 for holes inclined above horizontal and added to 180 for holes below horizontal.	
AltLndSur29ft	Altitude of land surface NGVD29 (ft)	–	Altitude of land surface within a reasonable proximity of the site; in feet above mean sea level; National Geodetic Vertical Datum of 1929 (NGVD29). This is an average of the surrounding ground-surface elevation. If the original surface has been altered, estimate the altitude based on nearby unaltered terrain.	
AltMth	Altitude method	–	Method used to determine altitude of land surface.	

Table B1. Description of Lithologic-Description Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
AltMth	Altitude method	A	Altimeter.	
AltMth	Altitude method	D	Differentially-corrected Global Positioning System (DGPS).	
AltMth	Altitude method	G	Global Positioning System (GPS).	
AltMth	Altitude method	I	Interferometric Synthetic Aperture Radar (IfSAR), airplane.	
AltMth	Altitude method	J	Light Detection And Ranging (LiDAR), airplane.	
AltMth	Altitude method	L	Level or other surveying method.	
AltMth	Altitude method	M	Interpolated from topographic map [report accuracy as ± one-half the contour interval (or supplementary contour interval) specified on the quadrangle].	
AltMth	Altitude method	N	Interpolated from digital elevation model (DEM).	
AltMth	Altitude method	R	Reported.	
AltMth	Altitude method	U	Unknown.	
AltAcc	Altitude accuracy	–	Altitude accuracy; in feet (decimal values for accuracies less than 1 ft).	
AltAcc	Altitude accuracy	U	Unknown.	
SitCmpDt	Site completion date	–	Date hole construction completed.	
HleDthft	Hole depth (ft)	–	Hole depth; in feet below land surface for boreholes and shafts; in feet from portal opening for tunnels and drifts.	
RedBkHleNo	Redbook hole number	–	Redbook hole numbers are currently assigned to new holes completed at the NTS by National Security Technologies, LLC (NSTec). Entries are listed in **bold** type where sites are located in areas other than the hole name implies.	

Table B1. Description of Lithologic-Description Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
RedBkHleNo	Redbook hole number	–	Redbook hole numbers listed in the Raytheon Services Nevada (RSN) Nevada Test Site Drilling and Mining Summary (last updated 12-31-90) and previously in the Fenix and Scisson of Nevada NTS Drilling and Mining Summary (last updated 06-30-89; formerly Fenix and Scisson, Inc.) were assigned according to the type of hole drilled or mined, site location (NTS area), and sequence code for the consecutive order in which the hole was drilled, mined, or recompleted. Emplacement holes for nuclear weapons tests begin with the letter U, followed by a dash (-), NTS area number (fig. 1), and sequence code (letters a-z, aa-az, ba-bz, …, za-zz). Exploratory holes follow the same naming convention as emplacement holes, but begin with the letters UE. Holes that begin with the letter U but were drilled or mined specifically to provide data that could not be collected from an emplacement hole follow the emplacement hole naming convention, but are assigned incremental letters or numbers, or both following the sequence code. The suffix letters indicate: [#, satellite hole; CH, cable hole; Ex. or Expl., exploratory hole; HTH, hydrologic test hole; Inst., instrument hole; ITS, integrated test system; PPS, pre-postshot hole; PS, post-shot hole; RNM, radionuclide migration hole; RWMS, radioactive waste management site; and S, substitute hole]. There are numerous exceptions to the standard naming convention. The prefix letters indicate: [HTH, hydrologic test hole; J, Jackass Flat; and RNM, radionuclide migration]. Numbers and letters following the dash in the exceptions represent sequence of site drilling or mining, not NTS location. Hole type also is commonly listed after the hole designation. For example: [Access Shaft; Cable Hole; Expl. Hole; Instrument; LOS (Line Of Sight) Drift; Sidetrack; Reentry Mining; Tunnel; Vent Hole; and Zero Station].	
RedBkHleNo	Redbook hole number	–	USGS DOE project-related holes in Central Nevada follow a similar naming convention. However emplacement holes begin with the letters UC and exploratory holes begin with the letters UCE.	
RedBkHleNo	Redbook hole number	–	USGS Yucca Mountain Project (YMP) holes at the NTS follow the exploratory hole naming convention. Offsite YMP holes begin with the letters USW to indicate underground southern Nevada waste. The suffix letters indicate: [G, geologic hole; GA, geologic angle hole; GU, geologic unsaturated zone hole; H, hydrologic hole; MX, missile-experimental hole (drilled for U.S. Air Force [USAF] MX Missile-Siting Investigation); N, neutron hole; p, Paleozoic or pre-Tertiary hole; RF, repository facility hole; UZ, unsaturated zone hole; V, volcanic hole; VSE, vertical shelter exploratory hole (drilled for USAF MX Missile-Siting Investigation); and WT, water table hole].	
RedBkHleNo	Redbook hole number	–	Environmental Restoration Program (ERP) holes at the NTS begin with the letters ER, followed by a dash, NTS area number (fig. 1), a dash, and an incremental sequence number. The NTS area number is replaced by suffix letters for ERP holes located offsite. The suffix letters indicate: [EC, area at the USAF Nellis Air Force Base Range (NAFBR) where the holes were drilled; and OV, Oasis Valley].	

Table B1. Description of Lithologic-Description Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
RedBkHleNo	Redbook hole number	–	LLNL Containment Program Data Base hole names are 10 characters in length. The first character identifies the site location of the hole: [U, Nevada Test Site; C, Central Nevada Test Site; A, Amchitka Test Site; and O, offsite hole]. The second and third characters identify either the right-justified Area number for an NTS hole, or the two-letter state abbreviation (U.S. Postal Service abbreviation) for an offsite hole: [U 2, NTS hole in Area 2; U20, NTS hole in Area 20; and ONV, offsite hole in Nevada]. The fourth character is reserved for specially defined areas at the NTS: [U 9I, NTS hole in Area 9, in the ITS area]. Characters 5-10 identify the hole complex or group of holes (of different types) related to the emplacement hole. This may include letters or numbers. For an NTS hole, the fifth and sixth characters are alphabetical descriptors and usually complete the common hole name for an emplacement hole: [U 2 c, NTS hole in Area 2; U 2 ca, NTS hole in Area 2, drilled after U 2 c; and U 2 cb, NTS hole in Area 2, drilled after U 2 ca]. For offsite holes, these characters will indicate county name, on a limited space basis: [ONV NYE, offsite hole in Nevada, Nye County; and OCO RBL, offsite hole in Colorado, Rio Blanco County]. These characters also may indicate project identifiers: [U 1 RNM, NTS hole in Area 1, Radionuclide Migration Program; and U 12 ER, NTS hole in Area 12, Environmental Restoration Program]. LLNL Containment Program Data Base hole types are: [A, access; B, rad chem; C, core; D, Waterways experiment Station (WES); E, exploratory; F, tunnel; G, auger, crack investigation; H, emplacement (H A or H B is a centerpunch emplacement hole); I, instrument; J, PINEX or LOS; K, escape; L, cable; M, hydrologic test hole; N, tracer and sample, foil recovery; O, tunnel dynamics; P, post test; Q, seismic, high explosive; R, re-entry (R-S is a reentry shaft); S, shaft (W/S is a whipstock hole); T, test hole (many types); U, post-test hole, in crater; V, vent; W, water supply; X, pre-post test; Y, abandoned; Z, waste storage; 1, rack assembly; 2, dump; 3, oil well; 4, gas well; 5, geothermal well; and ?, unknown hole type]. Multiple uses of a hole are indicated by consecutively adding hole type abbreviations in this field. If the hole is closely associated with another hole, or if it also is known by another name, this is indicated by /____. For example, the hole name: [U 2 bt HE/U2BU H] means that U 2 bt was initially an emplacement hole that became an exploratory hole. U 2 bt also is an exploratory hole for the nearby emplacement hole U 2 bu.	
FmrOthHleNme	Former or other hole name	–	Former or other names utilized for holes.	
AgyCdUSGSNWIS	NWIS agency code	USGS	USGS NWIS code to indicate the reporting agency. All sites currently populated in the lithologic-description database are assigned as USGS.	
SitIDNoUSGSNWIS	NWIS site identification number	–	USGS NWIS site identification number.	

Table B1. Description of Lithologic-Description Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SitIDNoUSGSNWIS	NWIS site identification number	–	Downstream order numbers are assigned for surface-water, on-stream, sites. The first two digits of the station number indicate the part or major drainage system formerly used for USGS Water-Supply Papers entitled “Surface Water Supply of the United States” and the remaining digits indicate the downstream order within the part. This site number is left-justified. Although downstream identification numbers have been converted to a variable length format, with up to 14 digits available, 8 digits are normally assigned.	
SitIDNoUSGSNWIS	NWIS site identification number	–	Numbering system for sites on open water bodies, off-channel sites, wells, springs, etc., is based on the grid system of latitude and longitude. Although this number is initially determined from the best known latitude/longitude location, plus a 2-digit sequence number for the number of sites located at those coordinates, it retains no locational relevance once the site is created in the database. The overall designation consists of 15 digits. The values of latitude and longitude are updated as better coordinates become available, and should always be used for locating sites or plotting locations.	
Lat27	Latitude NAD27	–	Latitude; in degrees, minutes, and seconds [two digits are available for decimal seconds]; North American Datum of 1927 (NAD27).	
Lng27	Longitude NAD27	–	Longitude; in degrees, minutes, and seconds [two digits are available for decimal seconds]; North American Datum of 1927 (NAD27).	
LocMth	Location method	–	Method used to determine latitude and longitude coordinates.	
LocMth	Location method	C	Calculated from land net.	
LocMth	Location method	D	Differentially-corrected Global Positioning System (DGPS).	
LocMth	Location method	G	Global positioning system (GPS), uncorrected [Standard Positioning Service (SPS) and Precise Positioning Service (PPS)].	
LocMth	Location method	L	Long-range navigation (Loran) system.	
LocMth	Location method	M	Interpolated from map.	
LocMth	Location method	N	Interpolated from digital map.	
LocMth	Location method	R	Reported.	
LocMth	Location method	S	Transit, theodolite, or other surveying method.	

Table B1. Description of Lithologic-Description Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
LocMth	Location method	U	Unknown.	
LocAcc	Location accuracy	--	Accuracy of latitude and longitude coordinates.	
LocAcc	Location accuracy	H	Hundredth second.	
LocAcc	Location accuracy	1	Tenth second.	
LocAcc	Location accuracy	5	Half second.	
LocAcc	Location accuracy	S	Second.	
LocAcc	Location accuracy	R	Three seconds.	
LocAcc	Location accuracy	F	Five seconds.	
LocAcc	Location accuracy	T	Ten seconds.	
LocAcc	Location accuracy	M	Minute.	
LocAcc	Location accuracy	U	Unknown.	
DecLat83	Decimal latitude NAD83	–	Latitude, in decimal degrees [automatically generated by the NWIS system software]; North American Datum of 1983 (NAD83).	
DecLng83	Decimal longitude NAD83	–	Longitude, in decimal degrees [automatically generated by NWIS system software]; North American Datum of 1983 (NAD83).	
UTME27m	UTM Easting NAD27 (meters)	–	Universal Transverse Mercator coordinates, Easting, zone 11, in meters; North American Datum of 1927 (NAD27).	
UTMN27m	UTM Northing NAD27 (meters)	–	Universal Transverse Mercator coordinates, Northing, zone 11, in meters; North American Datum of 1927 (NAD27).	
UTMErr	UTM error	–	UTM error, in meters. Blank if unknown.	
Rmk	Remarks	–	Pertinent remarks pertaining to the lithologic description.	
DtRcdLstUpd	Date record last updated	–	Date of data entry (compiled into electronic format) is listed if a row of record has not been modified. The date of last (most recent) update is listed if a row of record has been modified. This date does not indicate which columns of data have been modified; only that records have been updated within a particular row. Dates are listed as yyyymmdd (4-digit year; 2-digit month; 2-digit day).	
URLAdr	URL address	–	Link to online website and database.	

This page left intentionally blank

Appendix C. Rock-Property Database, Nevada Test Site and Vicinity, Nye County, Nevada

Rock-property data were compiled for both underground and surface sites located on and around the NTS. Appendix C data are available at URL: http://pubs.usgs.gov/ds/2007/297/.

Table C1. Description of Rock-Property Database field contents.

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SrtOrdUSGS	USGS NTS sort order	–	Emplacement and exploratory holes typically are displayed together. Many sites also have multiple completion intervals within the same hole. Therefore, a sort order number is assigned to all USGS sites associated with DOE and/or DOD projects in Nevada. This field is modified as new sites are added.	
UnqNoUSGS	USGS NTS unique number	–	Spatial (*X*-*Y*) coordinates are unavailable at some locations. Therefore, USGS site identification numbers cannot be established in the USGS NWIS database Sitefile for these sites. Because NWIS site identification numbers cannot be assigned to all sites, it is necessary to assign a unique site number to all USGS sites associated with USGS DOE/DOD projects in Nevada. Although the unique numbers were initially assigned in the same order as the USGS NTS sort order, new sites are assigned the next available sequential number.	
NTSArea	NTS area	–	NTS Administrative Area number (see fig. 1). Entries are listed in **bold** type where sites are located in areas other than the hole name implies. For example, USGS hole name **U - 4t** is actually located in NTS area **07**.	
HleNmeUSGS	USGS hole name	–	USGS hole name designation. Entries are listed in **bold** type where sites are located in areas other than the hole name implies.	
SmpIntNo	Sample interval number	–	Sequence of sample interval.	
SmpIntSeq	Sample sequence number	–	Sequence of samples, when multiple analyses are reported within a sample interval.	
SmpIntTop	Sample interval top	–	Depth to top of sample interval; below land surface for boreholes and shafts; from portal opening for tunnels and drifts.	
SmpIntBtm	Sample interval bottom	–	Depth to bottom of sample interval; below land surface for boreholes and shafts; from portal opening for tunnels and drifts.	
Unt01	Units	–	Sample depth reporting units.	
Date	Date	–	Date sample analyses reported (or analyzed; if known).	
SpecGrav	Specific gravity	–	Specific gravity (sample density/water density).	
GrnDen	Grain density	–	Grain density (dry weight/grain volume).	

Table C1. Description of Rock-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
Unt02	Units	–	Grain density reporting units.	
DryBlkDen	Dry bulk density	–	Dry bulk density. Bulk density is defined as dry bulk density.	
Unt03	Units	–	Bulk density reporting units.	
WetBlkDen	Wet (natural-state) bulk density	–	Wet bulk density. Also reported as natural- or sample-state bulk density.	
Unt04	Units	–	Bulk density reporting units.	
WetH2OWtPer	Wet H_2O content by weight (percent)	–	Wet H_2O content, by weight; as percentage. Computed as: [% H_2O volume / natural-state bulk density].	
DryH2OWtPer	Dry H_2O content by weight (percent)	–	Dry H_2O content, by weight; as percentage.	
H2OVolPer	H_2O content by volume (percent)	–	H_2O content, by volume; as percentage. Computed as: [(natural-state bulk density – dry bulk density) * 100].	
DryCO2WtPer	Dry CO_2 content by weight (percent)	–	Dry CO_2 content, by weight; as percentage.	
PorosityPer	Porosity (percent)	–	Porosity; as percentage.	
EffPorPer	Effective porosity (percent)	–	Effective porosity; as percentage.	
Rmk01	Remarks	–	Remarks concerning sample analyses. **Note:** [the **Copy EQ** (hot) button contained in this column (**X**) automatically recomputes the following five values (blue-shaded columns Y-Z, AA-AB, and AD) for the entire **rck_pty** worksheet utilizing the equations contained in row 2 (the hidden row)].	
CalcPorPer	Computed porosity (percent)	–	Computed porosity; as percentage. Computed, using dry bulk density, as: [{1 - (dry bulk density / grain density)} * 100]. Computed, using natural-state bulk density, as: [{1 - ((natural-state bulk density / grain density) * (1 - % wet H_2O weight / 100))} * 100]. **Note: [Data generated in this column represent raw, interval-specific, values that have not been corrected, averaged, or weighted to a proposed working point and therefore may not agree with referenced data]**.	
CalcGasFilPorPer	Computed gas-filled porosity (percent)	–	Computed gas-filled porosity; as percentage. Computed as: [porosity - (% wet H_2O weight * natural-state bulk density)]. **Note: [Data generated in this column represent raw, interval-specific, values that have not been corrected, averaged, or weighted to a proposed working point and therefore may not agree with referenced data].**	
CalcSatPer	Computed saturation (percent)	–	Computed saturation; as percentage. Computed as: [{(% wet H2O weight * natural-state bulk density) / porosity}100]. **Note: [Data generated in this column represent raw, interval-specific, values that have not been corrected, averaged, or weighted to a proposed working point and therefore may not agree with referenced data].**	

Table C1. Description of Rock-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
CalcDryBlkDen	Computed dry bulk density	–	Computed dry bulk density. Computed as: [natural-state bulk density * {1 - (% wet H2O weight / 100)}]. **Note: [Data generated in this column represent raw, interval-specific, values that have not been corrected, averaged, or weighted to a proposed working point and therefore may not agree with referenced data].**	
Unt05	Units	–	Bulk density reporting units.	
CalcSatBlkDen	Computed saturated bulk density	–	Computed saturated bulk density. Computed, using analyzed dry bulk density, as: [analyzed dry bulk density + (porosity / 100)]. Computed, computed dry bulk density, as: [computed dry bulk density + (porosity / 100)]. **Note: [Data generated in this column represent raw, interval-specific, values that have not been corrected, averaged, or weighted to a proposed working point and therefore may not agree with referenced data].**	
Unt06	Units	–	Bulk density reporting units.	
YoungsMod	Young's modulus	–	Young's modulus (or modulus of elasticity or tensile modulus).	
BlkMod	Bulk modulus	–	Bulk modulus (or compression modulus).	
ShrMod	Shear modulus	–	Shear modulus (or modulus of rigidity or 2nd Lame' constant).	
ModUnt	Moduli units	–	Moduli reporting units.	
PoissonsRat	Poisson's ratio	–	Poisson's ratio; a dimensionless value.	
CmpVel	Compressional velocity	–	Compressional velocity (or longitudinal velocity; P waves).	
ShrVel	Shear velocity	–	Shear velocity (or transverse velocity; S waves).	
VelUnt	Velocity units	–	Velocity reporting units.	
SmpPropSt	Sample properties state	–	Moduli (Young's, bulk, and shear) and velocity (compressional and shear) properties as well as Poisson's ratio are reported for both static and dynamic states. Mechanical rock property states are: [D - dynamic; S - static; U (or blank) - undefined].	
Rmk02	Remarks	–	Remarks concerning sample analyses.	
UncCmpStr	Unconfined compressive strength	–	Unconfined compressive strength.	
Unt07	Units	–	Unconfined compressive strength reporting units.	
SecYngsMod	Secant Young's modulus	–	Secant Young's modulus.	
Unt08	Units	–	Secant Young's modulus reporting units.	
SecRng	Secant range	–	Secant range.	
Unt09	Units	–	Secant range reporting units.	

Table C1. Description of Rock-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
MagSusc	Magnetic susceptibility	–	Magnetic susceptibility.	
Unt10	Units	–	Magnetic susceptibility reporting units.	
EndParCor	End parallelism of core	–	End parallelism of core.	
Unt11	Units	–	End parallelism of core reporting units.	
ShrHrd	Shore hardness	–	Shore hardness.	
Unt12	Units	–	Shore hardness reporting units.	
AnlyzAgy	Analyzing agency	–	Agency that performed the sample analyses.	
AnlyzAgy	Analyzing agency	Birdwell	Birdwell Division of Seismograph Service Corporation (SSC).	
AnlyzAgy	Analyzing agency	BN	Bechtel Nevada (BN).	
AnlyzAgy	Analyzing agency	CL	Core Laboratories, Inc. (CL), Bakersfield, California; Dallas, Texas.	
AnlyzAgy	Analyzing agency	DTRA	DOD, Defense Threat Reduction Agency (DTRA).	
AnlyzAgy	Analyzing agency	DRI	Desert Research Institute (DRI).	
AnlyzAgy	Analyzing agency	DS	Daniel B. Stephens and Associates, Inc. (DS), Albuquerque, NM.	
AnlyzAgy	Analyzing agency	F&S	Fenix and Scisson, Inc. (F&S).	
AnlyzAgy	Analyzing agency	FSN	Fenix and Scisson of Nevada (FSN).	
AnlyzAgy	Analyzing agency	H&N	Holmes & Narver, Inc. (H&N).	
AnlyzAgy	Analyzing agency	LANL	Los Alamos National Laboratory (LANL).	
AnlyzAgy	Analyzing agency	LLNL	Lawrence Livermore National Laboratory (LLNL).	
AnlyzAgy	Analyzing agency	NSTec	National Security Technologies, LLC (NSTec).	
AnlyzAgy	Analyzing agency	NTL	Nevada Testing Laboratories, LTD. (NTL).	
AnlyzAgy	Analyzing agency	PTL	Pittsburgh Testing Laboratory (PTL), Salt Lake City, Utah.	
AnlyzAgy	Analyzing agency	REECo	Reynolds Electrical & Engineering Company (REECo).	
AnlyzAgy	Analyzing agency	RSN	Raytheon Services Nevada (RSN).	
AnlyzAgy	Analyzing agency	SNL	Sandia National Laboratories (SNL).	
AnlyzAgy	Analyzing agency	TT	Terra Tek, Inc. (TT), Salt Lake City, Utah, a Schlumberger company; sometimes referred to as TerraTek Research.	
AnlyzAgy	Analyzing agency	UI	University of Illinois (UI).	
AnlyzAgy	Analyzing agency	USACE	U.S. Army Corps of Engineers (USACE).	
AnlyzAgy	Analyzing agency	USGS	USGS.	
DatSrc	Data source	–	Agency that reported rock-property data.	
DatSrc	Data source	Birdwell	Birdwell Division of Seismograph Service Corporation (SSC).	
DatSrc	Data source	BN	Bechtel Nevada (BN).	

Table C1. Description of Rock-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
DatSrc	Data source	CL	Core Laboratories, Inc. (CL), Bakersfield, California; Dallas, Texas.	
DatSrc	Data source	DTRA	DOD, Defense Threat Reduction Agency (DTRA).	
DatSrc	Data source	DRI	Desert Research Institute (DRI).	
DatSrc	Data source	DS	Daniel B. Stephens and Associates, Inc. (DS), Albuquerque, NM.	
DatSrc	Data source	F&S	Fenix and Scisson, Inc. (F&S).	
DatSrc	Data source	FSN	Fenix and Scisson of Nevada (FSN).	
DatSrc	Data source	H&N	Holmes & Narver, Inc. (H&N).	
DatSrc	Data source	LANL	Los Alamos National Laboratory (LANL).	
DatSrc	Data source	LLNL	Lawrence Livermore National Laboratory (LLNL).	
DatSrc	Data source	NSTec	National Security Technologies, LLC (NSTec).	
DatSrc	Data source	NTL	Nevada Testing Laboratories, LTD. (NTL).	
DatSrc	Data source	PTL	Pittsburgh Testing Laboratory (PTL), Salt Lake City, Utah.	
DatSrc	Data source	REECo	Reynolds Electrical & Engineering Company (REECo).	
DatSrc	Data source	RSN	Raytheon Services Nevada (RSN).	
DatSrc	Data source	SNL	Sandia National Laboratories (SNL).	
DatSrc	Data source	TT	Terra Tek, Inc. (TT), Salt Lake City, Utah, a Schlumberger company; sometimes referred to as TerraTek Research.	
DatSrc	Data source	UI	University of Illinois (UI).	
DatSrc	Data source	USACE	U.S. Army Corps of Engineers (USACE).	
DatSrc	Data source	USGS	USGS.	
RcdTypDsc	Record type or description	–	Record description and/or document type.	
RcdTypDsc	Record type or description	BN/PF	Bechtel Nevada (BN) Project Files (PF).	
RcdTypDsc	Record type or description	DTRA/PF	DOD, Defense Threat Reduction Agency (DTRA) Project Files (PF).	
RcdTypDsc	Record type or description	DRI/PF	Desert Research Institute (DRI) Project Files (PF).	
RcdTypDsc	Record type or description	DS/LR	Daniel B. Stephens and Associates, Inc. (DS) Laboratory Report (LR).	
RcdTypDsc	Record type or description	F&S/PF	Fenix and Scisson, Inc. (F&S) Project Files (PF).	

Table C1. Description of Rock-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
RcdTypDsc	Record type or description	FSN/PF	Fenix and Scisson of Nevada (FSN) Project Files (PF).	
RcdTypDsc	Record type or description	H&N/MTL	Holmes & Narver, Inc. (H&N) Materials Testing Laboratory (MTL).	
RcdTypDsc	Record type or description	LANL/PF	Los Alamos National Laboratory (LANL) Project Files (PF); referred to as “Blue Folders.”	
RcdTypDsc	Record type or description	LLNL/PF	Lawrence Livermore National Laboratory (LLNL) Project Files (PF).	
RcdTypDsc	Record type or description	NSTec/PF	National Security Technologies, LLC. (NSTec) Project Files (PF).	
RcdTypDsc	Record type or description	REECo/ES	Reynolds Electrical & Engineering Company (REECo) Environmental Sciences (ES).	
RcdTypDsc	Record type or description	REECo/ML	Reynolds Electrical & Engineering Company (REECo) Medical Laboratory (ML).	
RcdTypDsc	Record type or description	REECo/PF	Reynolds Electrical & Engineering Company (REECo) Project Files (PF).	
RcdTypDsc	Record type or description	RSN/MTL	Raytheon Services Nevada (RSN) Materials Testing Laboratory (MTL).	
RcdTypDsc	Record type or description	RSN/PF	Raytheon Services Nevada (RSN) Project Files (PF).	
RcdTypDsc	Record type or description	SNL/PF	Sandia National Laboratories (SNL) Project Files (PF).	
RcdTypDsc	Record type or description	UI/TL	University of Illinois (UI) Talbot Laboratory (TL).	
RcdTypDsc	Record type or description	USACE/WES	U.S. Army Corps of Engineers (USACE) Waterways Experiment Station (WES), Vicksburg, Mississippi.	
RcdTypDsc	Record type or description	USGS/EGBL/PPR	U.S. Geological Survey (USGS) Engineering Geology Branch Laboratory (EGBL) Physical Properties Results (PPR).	
RcdTypDsc	Record type or description	USGS/PF	USGS Project Files (PF).	

Table C1. Description of Rock-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
RptRef	Report reference	–	Published report that contains rock-property data. A complete list of acronyms and abbreviations used in USGS and other reports is included in the usgs_rpt and nts_acr_abv worksheets in the nts_rck_pty spreadsheet (appendix C). **NOTE: [USGS Technical Letters are considered internal correspondence and are not available for public release unless the report has been assigned a USGS Open-File Report number. Technical Letters prepared under the USGS Hydrologic Resource Management Program (HRMP, formerly Hydrology/Radionuclide Migration Program) and assigned "blanket open-file status" are designated "USGS-474-number." Technical Letters prepared under the USGS Yucca Mountain Program (YMP) and assigned "blanket open-file status" are designated "USGS-1543-number." Furthermore, some reports prepared by the National Laboratories and the various DOE and DOD subcontractors also may be considered internal correspondence and not available for public release. Users interested in these reports must check with the source agency to determine availability].**	
Invst	Investigators	–	Authors and/or investigators.	
RecLoc	Record location	–	Physical location of rock-property record.	
HleTyp	Hole type	–	Type of vertical or horizontal drilling or excavation.	
HleTyp	Hole type	Borehole	Vertical surface location; includes wells and vertical test holes.	
HleTyp	Hole type	Crater	Vertical surface location.	
HleTyp	Hole type	Drift	Horizontal underground location; includes tunnels and horizontal test holes.	
HleTyp	Hole type	Multiple Wells	Multiple wells.	
HleTyp	Hole type	Outcrop	Surface location.	
HleTyp	Hole type	Shaft	Vertical surface location.	
HleTyp	Hole type	Spring	Spring.	
HleTyp	Hole type	Streambed	Streambed.	
HleTyp	Hole type	Surface	Surface location.	
HleTyp	Hole type	Trench	Horizontal surface location.	
HleTyp	Hole type	Unknown	Hole type not known.	
TnlDftConSta	Tunnel or drift construction station	–	Construction station at collar location (portal opening), for tunnels and drifts (i.e. - 9+17 is 917 ft; 10+72,195' is a 195 ft hole at the 1,072 ft station; etc.).	
ConStaRmk	Construction station remarks	–	Remarks concerning the portal opening (collar location), for tunnels and drifts (i.e. - In U-12e.14 main drift; Alcove; Face; Invert; Lft Rib; Rt Rib; etc.).	
NVSPE27	Nevada SPCS Easting NAD27	–	Nevada state plane coordinates (SPCS), Easting, central zone, in feet; North American Datum of 1927 (NAD27).	
NVSPN27	Nevada SPCS Northing NAD27	–	Nevada state plane coordinates (SPCS), Northing, central zone, in feet; North American Datum of 1927 (NAD27).	

Table C1. Description of Rock-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
NVSPErr	SPCS error	--	SPCS error, in feet. Blank if unknown.	
AltPorOpn29ft	Altitude at portal opening NGVD29 (ft)	–	Altitude at the collar location of the portal opening, for tunnels and drifts; in feet above mean sea level; National Geodetic Vertical Datum of 1929 (NGVD29).	
BngPorOpnDeg	Bearing from portal opening (degrees)	–	Bearing from the portal opening, for tunnels and drifts; in degrees, minutes, and seconds or decimal degrees (i.e. - S0720958W is South, 72 degrees, 9 minutes, 58 seconds West; N0325529E is North, 32 degrees, 55 minutes, 29 seconds East; N052.75W is North 52 and three-quarter degrees West; etc.)	
IncPorOpnDeg	Inclination from portal opening (degrees)	–	Inclination from the portal opening, for tunnels and drifts; in degrees, minutes, and seconds or decimal degrees (i.e. - 0045825 is a hole 4 degrees, 58 minutes, 25 seconds above horizontal; 2700000 is a vertical hole below horizontal; 0900000 is a vertical hole above horizontal; 0000000 and 1800000 are horizontal holes; 0150000 and 1650000 are holes 15 degrees up (above horizontal); 3150000 and 2250000 are holes 45 degrees down (below horizontal); 356.5 is a hole 3 and one-half degrees below horizontal; 170.25 is 9 and three-quarter degrees above horizontal; etc.). Inclinations are linked to bearings, so values near horizontal for holes bearing north or east would be added to zero for holes inclined above horizontal and subtracted from 360 for holes below horizontal; conversely, values near horizontal for holes bearing south or west would be subtracted from 180 for holes inclined above horizontal and added to 180 for holes below horizontal.	
AltLndSur29ft	Altitude of land surface NGVD29 (ft)	–	Altitude of land surface within a reasonable proximity of the site; in feet above mean sea level; National Geodetic Vertical Datum of 1929 (NGVD29). This is an average of the surrounding ground-surface elevation. If the original surface has been altered, estimate the altitude based on nearby unaltered terrain.	
AltMth	Altitude method	–	Method used to determine altitude of land surface.	
AltMth	Altitude method	A	Altimeter.	
AltMth	Altitude method	D	Differentially-corrected Global Positioning System (DGPS).	
AltMth	Altitude method	G	Global Positioning System (GPS).	
AltMth	Altitude method	I	Interferometric Synthetic Aperture Radar (IfSAR), airplane.	
AltMth	Altitude method	J	Light Detection And Ranging (LiDAR), airplane.	
AltMth	Altitude method	L	Level or other surveying method.	
AltMth	Altitude method	M	Interpolated from topographic map [report accuracy as ± one-half the contour interval (or supplementary contour interval) specified on the quadrangle].	
AltMth	Altitude method	N	Interpolated from digital elevation model (DEM).	
AltMth	Altitude method	R	Reported.	
AltMth	Altitude method	U	Unknown.	

Table C1. Description of Rock-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
AltAcc	Altitude accuracy	–	Altitude accuracy; in feet (decimal values for accuracies less than 1 ft).	
AltAcc	Altitude accuracy	U	Unknown.	
SitCmpDt	Site completion date	–	Date hole construction completed.	
HleDthft	Hole depth (ft)	–	Hole depth; in feet below land surface for boreholes and shafts; in feet from portal opening for tunnels and drifts.	
RedBkHleNo	Redbook hole number	–	Redbook hole numbers are currently assigned to new holes completed at the NTS by National Security Technologies, LLC (NSTec). Entries are listed in **bold** type where sites are located in areas other than the hole name implies.	
RedBkHleNo	Redbook hole number	–	Redbook hole numbers listed in the Raytheon Services Nevada (RSN) Nevada Test Site Drilling and Mining Summary (last updated 12-31-90) and previously in the Fenix and Scisson of Nevada NTS Drilling and Mining Summary (last updated 06-30-89; formerly Fenix and Scisson, Inc.) were assigned according to the type of hole drilled or mined, site location (NTS area), and sequence code for the consecutive order in which the hole was drilled, mined, or recompleted. Emplacement holes for nuclear weapons tests begin with the letter U, followed by a dash (-), NTS area number (fig. 1), and sequence code (letters a-z, aa-az, ba-bz, …, za-zz). Exploratory holes follow the same naming convention as emplacement holes, but begin with the letters UE. Holes that begin with the letter U but were drilled or mined specifically to provide data that could not be collected from an emplacement hole follow the emplacement hole naming convention, but are assigned incremental letters or numbers, or both following the sequence code. The suffix letters indicate: [#, satellite hole; CH, cable hole; Ex. or Expl., exploratory hole; HTH, hydrologic test hole; Inst., instrument hole; ITS, integrated test system; PPS, pre-postshot hole; PS, post-shot hole; RNM, radionuclide migration hole; RWMS, radioactive waste management site; and S, substitute hole]. There are numerous exceptions to the standard naming convention. The prefix letters indicate: [HTH, hydrologic test hole; J, Jackass Flat; and RNM, radionuclide migration]. Numbers and letters following the dash in the exceptions represent sequence of site drilling or mining, not NTS location. Hole type also is commonly listed after the hole designation. For example: [Access Shaft; Cable Hole; Expl. Hole; Instrument; LOS (Line Of Sight) Drift; Sidetrack; Reentry Mining; Tunnel; Vent Hole; and Zero Station].	
RedBkHleNo	Redbook hole number	–	USGS DOE project-related holes in Central Nevada follow a similar naming convention. However emplacement holes begin with the letters UC and exploratory holes begin with the letters UCE.	
RedBkHleNo	Redbook hole number	–	USGS Yucca Mountain Project (YMP) holes at the NTS follow the exploratory hole naming convention. Offsite YMP holes begin with the letters USW to indicate underground southern Nevada waste. The suffix letters indicate: [G, geologic hole; GA, geologic angle hole; GU, geologic unsaturated zone hole; H, hydrologic hole; MX, missile-experimental hole (drilled for U.S. Air Force [USAF] MX Missile-Siting Investigation); N, neutron hole; p, Paleozoic or pre-Tertiary hole; RF, repository facility hole; UZ, unsaturated zone hole; V, volcanic hole; VSE, vertical shelter exploratory hole (drilled for USAF MX Missile-Siting Investigation); and WT water table hole].	

Table C1. Description of Rock-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
RedBkHleNo	Redbook hole number	–	Environmental Restoration Program (ERP) holes at the NTS begin with the letters ER, followed by a dash, NTS area number (fig. 1), a dash, and an incremental sequence number. The NTS area number is replaced by suffix letters for ERP holes located offsite. The suffix letters indicate: [EC, area at the USAF Nellis Air Force Base Range (NAFBR) where the holes were drilled; and OV, Oasis Valley].	
RedBkHleNo	Redbook hole number	–	LLNL Containment Program Data Base hole names are 10 characters in length. The first character identifies the site location of the hole: [U, Nevada Test Site; C, Central Nevada Test Site; A, Amchitka Test Site; and O, offsite hole]. The second and third characters identify either the right-justified Area number for an NTS hole, or the two-letter state abbreviation (U.S. Postal Service abbreviation) for an offsite hole: [U 2, NTS hole in Area 2; U20, NTS hole in Area 20; and ONV, offsite hole in Nevada]. The fourth character is reserved for specially defined areas at the NTS: [U 9I, NTS hole in Area 9, in the ITS area]. Characters 5-10 identify the hole complex or group of holes (of different types) related to the emplacement hole. This may include letters or numbers. For an NTS hole, the fifth and sixth characters are alphabetical descriptors and usually complete the common hole name for an emplacement hole: [U 2 c, NTS hole in Area 2; U 2 ca, NTS hole in Area 2, drilled after U 2 c; and U 2 cb, NTS hole in Area 2, drilled after U 2 ca]. For offsite holes, these characters will indicate county name, on a limited space basis: [ONV NYE, offsite hole in Nevada, Nye County; and OCO RBL, offsite hole in Colorado, Rio Blanco County]. These characters also may indicate project identifiers: [U 1 RNM, NTS hole in Area 1, Radionuclide Migration Program; and U 12 ER, NTS hole in Area 12, Environmental Restoration Program]. LLNL Containment Program Data Base hole types are: [A, access; B, rad chem; C, core; D, Waterways experiment Station (WES); E, exploratory; F, tunnel; G, auger, crack investigation; H, emplacement (H A or H B is a centerpunch emplacement hole); I, instrument; J, PINEX or LOS; K, escape; L, cable; M, hydrologic test hole; N, tracer and sample, foil recovery; O, tunnel dynamics; P, post test; Q, seismic, high explosive; R, re-entry (R-S is a reentry shaft); S, shaft (W/S is a whipstock hole); T, test hole (many types); U, post-test hole, in crater; V, vent; W, water supply; X, pre-post test; Y, abandoned; Z, waste storage; 1, rack assembly; 2, dump; 3, oil well; 4, gas well; 5, geothermal well; and ?, unknown hole type]. Multiple uses of a hole are indicated by consecutively adding hole type abbreviations in this field. If the hole is closely associated with another hole, or if it also is known by another name, this is indicated by /____. For example, the hole name: [U 2 bt HE/U2BU H] means that U 2 bt was initially an emplacement hole that became an exploratory hole. U 2 bt also is an exploratory hole for the nearby emplacement hole U 2 bu.	
FmrOthHleNme	Former or other hole name	–	Former or other names utilized for holes.	
AgyCdUSGSNWIS	NWIS agency code	USGS	USGS NWIS code to indicate the reporting agency. All sites currently populated in the rock-property database are assigned as USGS.	

Table C1. Description of Rock-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SitIDNoUSGSNWIS	NWIS site identification number	–	USGS NWIS site identification number.	
SitIDNoUSGSNWIS	NWIS site identification number	–	Downstream order numbers are assigned for surface-water, on-stream, sites. The first two digits of the station number indicate the part or major drainage system formerly used for USGS Water-Supply Papers entitled “Surface Water Supply of the United States” and the remaining digits indicate the downstream order within the part. This site number is left-justified. Although downstream identification numbers have been converted to a variable length format, with up to 14 digits available, 8 digits are normally assigned.	
SitIDNoUSGSNWIS	NWIS site identification number	–	Numbering system for sites on open water bodies, off-channel sites, wells, springs, etc., is based on the grid system of latitude and longitude. Although this number is initially determined from the best known latitude/longitude location, plus a 2-digit sequence number for the number of sites located at those coordinates, it retains no locational relevance once the site is created in the database. The overall designation consists of 15 digits. The values of latitude and longitude are updated as better coordinates become available, and should always be used for locating sites or plotting locations.	
Lat27	Latitude NAD27	–	Latitude; in degrees, minutes, and seconds [two digits are available for decimal seconds]; North American Datum of 1927 (NAD27).	
Lng27	Longitude NAD27	–	Longitude; in degrees, minutes, and seconds [two digits are available for decimal seconds]; North American Datum of 1927 (NAD27).	
LocMth	Location method	–	Method used to determine latitude and longitude coordinates.	
LocMth	Location method	C	Calculated from land net.	
LocMth	Location method	D	Differentially-corrected Global Positioning System (DGPS).	
LocMth	Location method	G	Global positioning system (GPS), uncorrected [Standard Positioning Service (SPS) and Precise Positioning Service (PPS)].	
LocMth	Location method	L	Long-range navigation (Loran) system.	
LocMth	Location method	M	Interpolated from map.	
LocMth	Location method	N	Interpolated from digital map.	
LocMth	Location method	R	Reported.	
LocMth	Location method	S	Transit, theodolite, or other surveying method.	
LocMth	Location method	U	Unknown.	
LocAcc	Location accuracy	–	Accuracy of latitude and longitude coordinates.	
LocAcc	Location accuracy	H	Hundredth second.	
LocAcc	Location accuracy	1	Tenth second.	
LocAcc	Location accuracy	5	Half second.	

Table C1. Description of Rock-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
LocAcc	Location accuracy	S	Second.	
LocAcc	Location accuracy	R	Three seconds.	
LocAcc	Location accuracy	F	Five seconds.	
LocAcc	Location accuracy	T	Ten seconds.	
LocAcc	Location accuracy	M	Minute.	
LocAcc	Location accuracy	U	Unknown.	
DecLat83	Decimal latitude NAD83	–	Latitude, in decimal degrees [automatically generated by the NWIS system software]; North American Datum of 1983 (NAD83).	
DecLng83	Decimal longitude NAD83	–	Longitude, in decimal degrees [automatically generated by NWIS system software]; North American Datum of 1983 (NAD83).	
UTME27m	UTM Easting NAD27 (meters)	–	Universal Transverse Mercator coordinates, Easting, zone 11, in meters; North American Datum of 1927 (NAD27).	
UTMN27m	UTM Northing NAD27 (meters)	–	Universal Transverse Mercator coordinates, Northing, zone 11, in meters; North American Datum of 1927 (NAD27).	
UTMErr	UTM error	–	UTM error, in meters. Blank if unknown.	
Rmk03	Remarks	–	Pertinent remarks pertaining to the rock properties.	
DtRcdLstUpd	Date record last updated	–	Date of data entry (compiled into electronic format) is listed if a row of record has not been modified. The date of last (most recent) update is listed if a row of record has been modified. This date does not indicate which columns of data have been modified; only that records have been updated within a particular row. Dates are listed as yyyymmdd (4-digit year; 2-digit month; 2-digit day).	
URLAdr	URL address	–	Link to online website and database.	

Appendix D. Fracture-Characteristic Database, Nevada Test Site and Vicinity, Nye County, Nevada.

Fracture-characteristic data were compiled for both underground and surface sites located on and around the NTS. Appendix D data are available at URL: http://pubs.usgs.gov/ds/2007/297/.

Table D1. Description of Fracture-Characteristic Database field contents.

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SrtOrdUSGS	USGS NTS sort order	–	Emplacement and exploratory holes typically are displayed together. Many sites also have multiple completion intervals within the same hole. Therefore, a sort order number is assigned to all USGS sites associated with DOE and/or DOD projects in Nevada. This field is modified as new sites are added.	
UnqNoUSGS	USGS NTS unique number	–	Spatial (*X*-*Y*) coordinates are unavailable at some locations. Therefore, USGS site identification numbers cannot be established in the USGS NWIS database Sitefile for these sites. Because NWIS site identification numbers cannot be assigned to all sites, it is necessary to assign a unique site number to all USGS sites associated with USGS DOE/DOD projects in Nevada. Although the unique numbers were initially assigned in the same order as the USGS NTS sort order, new sites are assigned the next available sequential number.	
NTSArea	NTS area	–	NTS Administrative Area number (see fig. 1). Entries are listed in **bold** type where sites are located in areas other than the hole name implies. For example, USGS hole name **UE-14b** is actually located in NTS area **06**.	
HleNmeUSGS	USGS hole name	–	USGS hole name designation. Entries are listed in **bold** type where sites are located in areas other than the hole name implies.	
FctIntNo	Fracture interval number	–	Sequence of fracture interval.	
FctIntSeq	Fracture interval sequence number	–	Sequence of descriptions, when multiple descriptions are reported within a fracture interval.	
FctIntTopft	Fracture interval top (ft)	–	Top of fracture interval; in feet below land surface for boreholes and shafts; in feet from portal opening for tunnels and drifts.	
FctIntBtmft	Fracture interval bottom (ft)	–	Bottom of fracture interval; in feet below land surface for boreholes and shafts; in feet from portal opening for tunnels and drifts.	
FctDsc	Fracture description	–	Description of fracture characteristics.	
FctFreqft	Fracture frequency (fractures/ft)	–	Frequency of fractures; as fractures per foot.	

Table D1. Description of Fracture-Characteristic Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
FctOrientDeg	Fracture orientation (degrees)	–	Orientation of fractures; as degrees from horizontal to vertical.	
FctRmk	Fracture remarks	–	Pertinent comments concerning fracture descriptions.	
LthIntNo	Lithologic interval number	–	Sequence of lithologic interval adjacent to fracture interval.	
LthIntSeq	Lithologic interval sequence number	–	Sequence of descriptions, when multiple descriptions are reported within a lithologic interval.	
LthIntTopft	Lithologic interval top (ft)	–	Top of lithologic unit adjacent to fracture interval; in feet below land surface for boreholes and shafts; in feet from portal opening for tunnels and drifts.	
LthIntBtmft	Lithologic interval bottom (ft)	–	Bottom of lithologic unit adjacent to fracture interval; in feet below land surface for boreholes and shafts; in feet from portal opening for tunnels and drifts.	
SmpLogTyp	Sample or log type	–	Type of sample or log that lithologic description is based upon.	
SmpLogTyp	Sample or log type	Basket	–	
SmpLogTyp	Sample or log type	Binocular microscope	–	
SmpLogTyp	Sample or log type	Bit	–	
SmpLogTyp	Sample or log type	Core	–	
SmpLogTyp	Sample or log type	Core and Cuttings	–	
SmpLogTyp	Sample or log type	Core and Geophysical log	–	
SmpLogTyp	Sample or log type	Core and Movie log	–	
SmpLogTyp	Sample or log type	Core and Sidewall	–	
SmpLogTyp	Sample or log type	Core, Sidewall, and Cuttings	–	
SmpLogTyp	Sample or log type	Cuttings	–	
SmpLogTyp	Sample or log type	Cuttings and Geophysical log	–	
SmpLogTyp	Sample or log type	Cuttings and Movie log	–	

Table D1. Description of Fracture-Characteristic Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SmpLogTyp	Sample or log type	Field notes	–	
SmpLogTyp	Sample or log type	Geophysical log	–	
SmpLogTyp	Sample or log type	Grab	–	
SmpLogTyp	Sample or log type	Movie log	–	
SmpLogTyp	Sample or log type	None	–	
SmpLogTyp	Sample or log type	Sidewall	–	
SmpLogTyp	Sample or log type	Sidewall and Cuttings	–	
SmpLogTyp	Sample or log type	Sidewall and Geophysical log	–	
SmpLogTyp	Sample or log type	Sidewall and Movie log	–	
SmpLogTyp	Sample or log type	Thin section	–	
SmpLogTyp	Sample or log type	Unknown	–	
LthDsc	Lithologic description	–	Entire lithologic description verbatim. The intent is to offer the most comprehensive (usually the original) description available. Core and sidewall samples always take precedence over cuttings descriptions. Multiple descriptions exist for many holes. However, subsequent descriptions are abridged and important alteration and structural inferences are lost. Although stratigraphic units are frequently updated and lithologies are occasionally modified, original descriptions still take precedence because cuttings samples were interpreted with the aid of binocular microscopes and questionable core samples were interpreted from thin sections utilizing petrographic microscopes (and occasionally spectrographic analysis).	
GeoUntUSGSNWIS	USGS NWIS geologic unit	–	Geologic unit or aquifer name code stored in the Ground-Water Information System (GWSI) subsystem of the USGS NWIS Ingress database. For example: [110VLFL - Quaternary valley fill; 121AMTK - Tertiary Ammonia Tanks Member; 121RRMS - Tertiary Rainier Mesa Member; 122PBRS - Tertiary Paintbrush Tuff; 327ELEN - Pennsylvanian Eleana Formation; 331CNMN - Mississippian Chainman Shale; 344NEVD - Devonian Nevada Formation; 361EURK - Ordovician Eureka Quartzite; and 400SRLG - Precambrian Stirling Quartzite]. A complete list of codes is included in the nv_geo_unt worksheet in the nts_fct_chr spreadsheet (appendix D).	
LthUntUSGSNWIS	USGS NWIS lithologic unit	–	Lithologic unit code stored in the GWSI database. For example: [ALVM - alluvium; CLAY - clay; DLMT - dolomite; GRVL - gravel; LMSN - limestone; QRTZ - quartzite; SAND - sand; SHLE - shale; and TUFF - tuff]. A complete list of codes is included in the lith_unt worksheet in the nts_fct_chr spreadsheet (appendix D).	

Table D1. Description of Fracture-Characteristic Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
MapUntSym	Map unit symbol	–	A list of map unit symbols commonly used at the NTS and vicinity are provided. For example: [QTa - middle Pleistocene to late Tertiary alluvial deposits; Tac - Miocene Calico Hills Formation; Tbgr - Tertiary crystal-rich Grouse Canyon Tuff; Tcpk - Tertiary Rhyolite of Kearsarge; TnABCD - Tertiary Tunnel Formation, 4 Member, beds 4A, 4B, 4C, and 4D; Oaa - Ordovician Antelope Valley Limestone, Aysees Peak Member; and Dg - upper and middle Devonian Guilmette Formation]. A complete list of codes is included in the map_unt worksheet in the nts_fct_chr spreadsheet (appendix D).	
LthRmk	Lithologic remarks	–	Comments pertaining to lithologic-interval descriptions. Currently used mostly to house stratigraphic/lithologic references included with written descriptions; these data are utilized as an aid for populating the USGS NWIS geologic unit and USGS NWIS lithologic unit columns.	
DatSrc	Data source	–	Agency that reported fracture-characteristic data.	
DatSrc	Data source	AML	Analytical Materials Laboratory, 3463 State Street, #349, Santa Barbara, California.	
DatSrc	Data source	BN	Bechtel Nevada (BN).	
DatSrc	Data source	DTRA	DOD, Defense Threat Reduction Agency (DTRA).	
DatSrc	Data source	F&S	Fenix and Scisson, Inc. (F&S).	
DatSrc	Data source	FSN	Fenix and Scisson of Nevada (FSN).	
DatSrc	Data source	IT Corp.	International Technology Corporation (IT Corp., purchased by Shaw Group, Inc.).	
DatSrc	Data source	LANL	Los Alamos National Laboratory (LANL).	
DatSrc	Data source	LLNL	Lawrence Livermore National Laboratory (LLNL).	
DatSrc	Data source	NDWR	State of Nevada, Department of Conservation and Natural Resources, Division of Water Resources (State Engineer).	
DatSrc	Data source	NSTec	National Security Technologies, LLC (NSTec).	
DatSrc	Data source	RSN	Raytheon Services Nevada (RSN).	
DatSrc	Data source	SNJV	Stoller-Navarro Joint Venture (SNJV).	
DatSrc	Data source	USGS	USGS.	
RcdTypDsc	Record type or description	–	Record description and/or document type.	
RcdTypDsc	Record type or description	BN/PF	Bechtel Nevada (BN) Project Files (PF).	
RcdTypDsc	Record type or description	DTRA/PF	DOD, Defense Threat Reduction Agency (DTRA) Project Files (PF).	
RcdTypDsc	Record type or description	F&S/PF	Fenix and Scisson, Inc. (F&S) Project Files (PF).	

Table D1. Description of Fracture-Characteristic Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
RcdTypDsc	Record type or description	FSN/PF	Fenix and Scisson of Nevada (FSN) Project Files (PF).	
RcdTypDsc	Record type or description	IT Corp./PF	International Technology Corporation (IT Corp.) Project Files (PF).	
RcdTypDsc	Record type or description	LANL/PF	Los Alamos National Laboratory (LANL) Project Files (PF); referred to as "Blue Folders."	
RcdTypDsc	Record type or description	LLNL/PF	Lawrence Livermore National Laboratory (LLNL) Project Files (PF).	
RcdTypDsc	Record type or description	NDWR/WDR	State of Nevada, Division of Water Resources, Well Driller's Report (Well Log).	
RcdTypDsc	Record type or description	NSTec/PF	National Security Technologies, LLC. (NSTec) Project Files (PF).	
RcdTypDsc	Record type or description	RSN/PF	Raytheon Services Nevada (RSN) Project Files (PF).	
RcdTypDsc	Record type or description	SNJV/PF	Stoller-Navarro Joint Venture (SNJV) Project Files (PF).	
RcdTypDsc	Record type or description	USGS/PF	USGS Project Files (PF).	
RptRef	Report reference	–	Published report that contains fracture-characteristic data. A complete list of acronyms and abbreviations used in USGS and other reports is included in the usgs_rpt and nts_acr_abv worksheets in the nts_fct_chr spreadsheet (appendix D). **NOTE: [USGS Technical Letters are considered internal correspondence and are not available for public release unless the report has been assigned a USGS Open-File Report number. Technical Letters prepared under the USGS Hydrologic Resource Management Program (HRMP, formerly Hydrology/Radionuclide Migration Program) and assigned "blanket open-file status" are designated "USGS-474-number." Technical Letters prepared under the USGS Yucca Mountain Program (YMP) and assigned "blanket open-file status" are designated "USGS-1543-number." Furthermore, some reports prepared by the National Laboratories and the various DOE and DOD subcontractors also may be considered internal correspondence and not available for public release. Users interested in these reports must check with the source agency to determine availability]**.	
Invst	Investigators	–	Authors and/or investigators.	
LocIDLANL	LANL PGG Database loc_id	–	This unique symbol within the LANL PGG database represents a specific, usually unique location on the surface, or a specific, usually unique location within a tunnel. The dash character (-) is reserved for sample IDs and therefore dashes in published locations are converted to a foreslash (/). Thus 11/102/7A is the loc_id for a sample identified by its collector as 11-102-7-A. Description updated from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/

Table D1. Description of Fracture-Characteristic Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SamIDLANL	LANL PGG Database sam_id	–	This unique symbol within the LANL PGG database represents up to a few kilograms of contiguous material from the surface or subsurface. The dash special character (-) designates multiple samples from a single location, and a left parenthesis '(' designates multiple splits from a single sample. Samples from vertical drill holes will always have sam_id's represented by the location, which is the drill hole name, followed by a dash (-) and the sample depth in feet, for example, USWG2-770. Sample depths in meters attach "M" following the metric depth, for example, USWG2-506.65M. Multiple samples from the same location, for example a whole-rock sample and several lithic and pumice separates, will always have sam_id's represented by the location followed by a dash (-) and a character string, for example RW18B3-WR, RW18B3-PU1, and RW18B3-PU2. Description updated from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
SplIDLANL	LANL PGG Database spl_id	–	This unique symbol within the LANL PGG database represents a split of a sample for analysis. A split represents analysis for one or more element or component that is performed by a single laboratory. Usually, a few grams are split from the sample and specially prepared for the analytical procedure, such as a glass-covered thin section for petrographic analysis or pulverized rock for chemical analysis. Each thin section and each laboratory's chemical analysis represents a separate split, even if the analyses are performed by different analysts on widely separated dates. Each thin section represents a split, but each batch of sample pulverized for chemical analysis does not. A left parenthesis '(' designates each split from a single sample, such as BH86N/33(B, a polished thin section for sample BH86N/33. Multiple chemical analyses of the same sample by the same laboratory and multiple analyses of the same thin section are considered to represent replicate analyses. To represent split analyses, replicate chemical analyses are averaged, weighted by the inverse square of their analytical uncertainties. Replicate petrographic analyses are ranked; analyses of the same rank are averaged, weighted by the number of points counted. Individual replicate analyses are not stored within the database, but analysts and analytical dates and other information are provided with the analytical data. Description updated from LANL Report LA-UR-03-1503 (2003).	http://www.pggdb-swnvf.lanl.gov/
RecLoc	Record location	–	Physical location of fracture-characteristic record.	
HleTyp	Hole type	–	Type of vertical or horizontal drilling or excavation.	
HleTyp	Hole type	Borehole	Vertical surface location; includes wells and vertical test holes.	
HleTyp	Hole type	Crater	Vertical surface location.	
HleTyp	Hole type	Drift	Horizontal underground location; includes tunnels and horizontal test holes.	
HleTyp	Hole type	Multiple Wells	Multiple wells.	
HleTyp	Hole type	Outcrop	Surface location.	
HleTyp	Hole type	Shaft	Vertical surface location.	
HleTyp	Hole type	Spring	Spring.	

Table D1. Description of Fracture-Characteristic Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
HleTyp	Hole type	Streambed	Streambed.	
HleTyp	Hole type	Surface	Surface location.	
HleTyp	Hole type	Trench	Horizontal surface location.	
HleTyp	Hole type	Unknown	Hole type not known.	
TnlDftConSta	Tunnel or drift construction station	–	Construction station at collar location (portal opening), for tunnels and drifts (i.e. - 9+17 is 917 ft; 10+72,195' is a 195 ft hole at the 1,072 ft station; etc.).	
ConStaRmk	Construction station remarks	–	Remarks concerning the portal opening (collar location), for tunnels and drifts (i.e. - In U-12e.14 main drift; Alcove; Face; Invert; Lft Rib; Rt Rib; etc.).	
NVSPE27	Nevada SPCS Easting NAD27	–	Nevada state plane coordinates (SPCS), Easting, central zone, in feet; North American Datum of 1927 (NAD27).	
NVSPN27	Nevada SPCS Northing NAD27	–	Nevada state plane coordinates (SPCS), Northing, central zone, in feet; North American Datum of 1927 (NAD27).	
NVSPErr	SPCS error	–	SPCS error, in feet. Blank if unknown.	
AltPorOpn29ft	Altitude at portal opening NGVD29 (ft)	–	Altitude at the collar location of the portal opening, for tunnels and drifts; in feet above mean sea level; National Geodetic Vertical Datum of 1929 (NGVD29).	
BngPorOpnDeg	Bearing from portal opening (degrees)	–	Bearing from the portal opening, for tunnels and drifts; in degrees, minutes, and seconds or decimal degrees (i.e. - S0720958W is South, 72 degrees, 9 minutes, 58 seconds West; N0325529E is North, 32 degrees, 55 minutes, 29 seconds East; N052.75W is North 52 and three-quarter degrees West; etc.)	
IncPorOpnDeg	Inclination from portal opening (degrees)	–	Inclination from the portal opening, for tunnels and drifts; in degrees, minutes, and seconds or decimal degrees (i.e. - 0045825 is a hole 4 degrees, 58 minutes, 25 seconds above horizontal; 2700000 is a vertical hole below horizontal; 0900000 is a vertical hole above horizontal; 0000000 and 1800000 are horizontal holes; 0150000 and 1650000 are holes 15 degrees up (above horizontal); 3150000 and 2250000 are holes 45 degrees down (below horizontal); 356.5 is a hole 3 and one-half degrees below horizontal; 170.25 is 9 and three-quarter degrees above horizontal; etc.). Inclinations are linked to bearings, so values near horizontal for holes bearing north or east would be added to zero for holes inclined above horizontal and subtracted from 360 for holes below horizontal; conversely, values near horizontal for holes bearing south or west would be subtracted from 180 for holes inclined above horizontal and added to 180 for holes below horizontal.	

Table D1. Description of Fracture-Characteristic Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
AltLndSur29ft	Altitude of land surface NGVD29 (ft)	–	Altitude of land surface within a reasonable proximity of the site; in feet above mean sea level; National Geodetic Vertical Datum of 1929 (NGVD29). This is an average of the surrounding ground-surface elevation. If the original surface has been altered, estimate the altitude based on nearby unaltered terrain.	
AltMth	Altitude method	–	Method used to determine altitude of land surface.	
AltMth	Altitude method	A	Altimeter.	
AltMth	Altitude method	D	Differentially corrected Global Positioning System (DGPS).	
AltMth	Altitude method	G	Global Positioning System (GPS).	
AltMth	Altitude method	I	Interferometric Synthetic Aperture Radar (IfSAR), airplane.	
AltMth	Altitude method	J	Light Detection And Ranging (LiDAR), airplane.	
AltMth	Altitude method	L	Level or other surveying method.	
AltMth	Altitude method	M	Interpolated from topographic map [report accuracy as ± one-half the contour interval (or supplementary contour interval) specified on the quadrangle].	
AltMth	Altitude method	N	Interpolated from digital elevation model (DEM).	
AltMth	Altitude method	R	Reported.	
AltMth	Altitude method	U	Unknown.	
AltAcc	Altitude accuracy	–	Altitude accuracy; in feet (decimal values for accuracies less than 1 ft).	
AltAcc	Altitude accuracy	U	Unknown.	
SitCmpDt	Site completion date	–	Date hole construction completed.	
HleDthft	Hole depth (ft)	–	Hole depth; in feet below land surface for boreholes and shafts; in feet from portal opening for tunnels and drifts.	

Table D1. Description of Fracture-Characteristic Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
RedBkHleNo	Redbook hole number	–	Redbook hole numbers are currently assigned to new holes completed at the NTS by National Security Technologies, LLC (NSTec). Entries are listed in **bold** type where sites are located in areas other than the hole name implies.	
RedBkHleNo	Redbook hole number	–	Redbook hole numbers listed in the Raytheon Services Nevada (RSN) Nevada Test Site Drilling and Mining Summary (last updated 12-31-90) and previously in the Fenix and Scisson of Nevada NTS Drilling and Mining Summary (last updated 06-30-89; formerly Fenix and Scisson, Inc.) were assigned according to the type of hole drilled or mined, site location (NTS area), and sequence code for the consecutive order in which the hole was drilled, mined, or recompleted. Emplacement holes for nuclear weapons tests begin with the letter U, followed by a dash (-), NTS area number (fig. 1), and sequence code (letters a-z, aa-az, ba-bz, …, za-zz). Exploratory holes follow the same naming convention as emplacement holes, but begin with the letters UE. Holes that begin with the letter U but were drilled or mined specifically to provide data that could not be collected from an emplacement hole follow the emplacement hole naming convention, but are assigned incremental letters or numbers, or both following the sequence code. The suffix letters indicate: [#, satellite hole; CH, cable hole; Ex. or Expl., exploratory hole; HTH, hydrologic test hole; Inst., instrument hole; ITS, integrated test system; PPS, pre-postshot hole; PS, post-shot hole; RNM, radionuclide migration hole; RWMS, radioactive waste management site; and S, substitute hole]. There are numerous exceptions to the standard naming convention. The prefix letters indicate: [HTH, hydrologic test hole; J, Jackass Flat; and RNM, radionuclide migration]. Numbers and letters following the dash in the exceptions represent sequence of site drilling or mining, not NTS location. Hole type also is commonly listed after the hole designation. For example: [Access Shaft; Cable Hole; Expl. Hole; Instrument; LOS (Line Of Sight) Drift; Sidetrack; Reentry Mining; Tunnel; Vent Hole; and Zero Station].	
RedBkHleNo	Redbook hole number	–	USGS DOE project-related holes in Central Nevada follow a similar naming convention. However, emplacement holes begin with the letters UC and exploratory holes begin with the letters UCE.	
RedBkHleNo	Redbook hole number	–	USGS Yucca Mountain Project (YMP) holes at the NTS follow the exploratory hole naming convention. Offsite YMP holes begin with the letters USW to indicate underground southern Nevada waste. The suffix letters indicate: [G, geologic hole; GA, geologic angle hole; GU, geologic unsaturated zone hole; H, hydrologic hole; MX, missile-experimental hole (drilled for U.S. Air Force [USAF] MX Missile-Siting Investigation); N, neutron hole; p, Paleozoic or pre-Tertiary hole; RF, repository facility hole; UZ, unsaturated zone hole; V, volcanic hole; VSE, vertical shelter exploratory hole (drilled for USAF MX Missile-Siting Investigation); and WT, water table hole].	

Table D1. Description of Fracture-Characteristic Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
RedBkHleNo	Redbook hole number	–	Environmental Restoration Program (ERP) holes at the NTS begin with the letters ER, followed by a dash, NTS area number (fig. 1), a dash, and an incremental sequence number. The NTS area number is replaced by suffix letters for ERP holes located offsite. The suffix letters indicate: [EC, area at the USAF Nellis Air Force Base Range (NAFBR) where the holes were drilled; and OV, Oasis Valley].	
RedBkHleNo	Redbook hole number	–	LLNL Containment Program Data Base hole names are 10 characters in length. The first character identifies the site location of the hole: [U, Nevada Test Site; C, Central Nevada Test Site; A, Amchitka Test Site; and O, offsite hole]. The second and third characters identify either the right-justified Area number for an NTS hole, or the two-letter state abbreviation (U.S. Postal Service abbreviation) for an offsite hole: [U 2, NTS hole in Area 2; U20, NTS hole in Area 20; and ONV, offsite hole in Nevada]. The fourth character is reserved for specially defined areas at the NTS: [U 9I, NTS hole in Area 9, in the ITS area]. Characters 5-10 identify the hole complex or group of holes (of different types) related to the emplacement hole. This may include letters or numbers. For an NTS hole, the fifth and sixth characters are alphabetical descriptors and usually complete the common hole name for an emplacement hole: [U 2 c, NTS hole in Area 2; U 2 ca, NTS hole in Area 2, drilled after U 2 c; and U 2 cb, NTS hole in Area 2, drilled after U 2 ca]. For offsite holes, these characters will indicate county name, on a limited space basis: [ONV NYE, offsite hole in Nevada, Nye County; and OCO RBL, offsite hole in Colorado, Rio Blanco County]. These characters also may indicate project identifiers: [U 1 RNM, NTS hole in Area 1, Radionuclide Migration Program; and U 12 ER, NTS hole in Area 12, Environmental Restoration Program]. LLNL Containment Program Data Base hole types are: [A, access; B, rad chem; C, core; D, Waterways experiment Station (WES); E, exploratory; F, tunnel; G, auger, crack investigation; H, emplacement (H A or H B is a centerpunch emplacement hole); I, instrument; J, PINEX or LOS; K, escape; L, cable; M, hydrologic test hole; N, tracer and sample, foil recovery; O, tunnel dynamics; P, post test; Q, seismic, high explosive; R, re-entry (R-S is a reentry shaft); S, shaft (W/S is a whipstock hole); T, test hole (many types); U, post-test hole, in crater; V, vent; W, water supply; X, pre-post test; Y, abandoned; Z, waste storage; 1, rack assembly; 2, dump; 3, oil well; 4, gas well; 5, geothermal well; and ?, unknown hole type]. Multiple uses of a hole are indicated by consecutively adding hole type abbreviations in this field. If the hole is closely associated with another hole, or if it also is known by another name, this is indicated by /____. For example, the hole name: [U 2 bt HE/U2BU H] means that U 2 bt was initially an emplacement hole that became an exploratory hole. U 2 bt also is an exploratory hole for the nearby emplacement hole U 2 bu.	

Table D1. Description of Fracture-Characteristic Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
FmrOthHleNme	Former or other hole name	–	Former or other names utilized for holes.	
AgyCdUSGSNWIS	NWIS agency code	USGS	USGS NWIS code to indicate the reporting agency. All sites currently populated in the fracture-characteristic database are assigned as USGS.	
SitIDNoUSGSNWIS	NWIS site identification number	–	USGS NWIS site identification number.	
SitIDNoUSGSNWIS	NWIS site identification number	–	Downstream order numbers are assigned for surface-water, on-stream, sites. The first two digits of the station number indicate the part or major drainage system formerly used for USGS Water-Supply Papers entitled “Surface Water Supply of the United States” and the remaining digits indicate the downstream order within the part. This site number is left-justified. Although downstream identification numbers have been converted to a variable length format, with up to 14 digits available, 8 digits are normally assigned.	
SitIDNoUSGSNWIS	NWIS site identification number	–	Numbering system for sites on open water bodies, off-channel sites, wells, springs, etc., is based on the grid system of latitude and longitude. Although this number is initially determined from the best known latitude/longitude location, plus a 2-digit sequence number for the number of sites located at those coordinates, it retains no locational relevance once the site is created in the database. The overall designation consists of 15 digits. The values of latitude and longitude are updated as better coordinates become available, and should always be used for locating sites or plotting locations.	
Lat27	Latitude NAD27	–	Latitude; in degrees, minutes, and seconds [two digits are available for decimal seconds]; North American Datum of 1927 (NAD27).	
Lng27	Longitude NAD27	–	Longitude; in degrees, minutes, and seconds [two digits are available for decimal seconds]; North American Datum of 1927 (NAD27).	
LocMth	Location method	–	Method used to determine latitude and longitude coordinates.	
LocMth	Location method	C	Calculated from land net.	
LocMth	Location method	D	Differentially corrected Global Positioning System (DGPS).	
LocMth	Location method	G	Global positioning system (GPS), uncorrected [Standard Positioning Service (SPS) and Precise Positioning Service (PPS)].	
LocMth	Location method	L	Long-range navigation (Loran) system.	
LocMth	Location method	M	Interpolated from map.	
LocMth	Location method	N	Interpolated from digital map.	
LocMth	Location method	R	Reported.	
LocMth	Location method	S	Transit, theodolite, or other surveying method.	

Table D1. Description of Fracture-Characteristic Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
LocMth	Location method	U	Unknown.	
LocAcc	Location accuracy	--	Accuracy of latitude and longitude coordinates.	
LocAcc	Location accuracy	H	Hundredth second.	
LocAcc	Location accuracy	1	Tenth second.	
LocAcc	Location accuracy	5	Half second.	
LocAcc	Location accuracy	S	Second.	
LocAcc	Location accuracy	R	Three seconds.	
LocAcc	Location accuracy	F	Five seconds.	
LocAcc	Location accuracy	T	Ten seconds.	
LocAcc	Location accuracy	M	Minute.	
LocAcc	Location accuracy	U	Unknown.	
DecLat83	Decimal latitude NAD83	–	Latitude, in decimal degrees [automatically generated by the NWIS system software]; North American Datum of 1983 (NAD83).	
DecLng83	Decimal longitude NAD83	–	Longitude, in decimal degrees [automatically generated by NWIS system software]; North American Datum of 1983 (NAD83).	
UTME27m	UTM Easting NAD27 (meters)	–	Universal Transverse Mercator coordinates, Easting, zone 11, in meters; North American Datum of 1927 (NAD27).	
UTMN27m	UTM Northing NAD27 (meters)	–	Universal Transverse Mercator coordinates, Northing, zone 11, in meters; North American Datum of 1927 (NAD27).	
UTMErr	UTM error	–	UTM error, in meters. Blank if unknown.	
Rmk	Remarks	–	Pertinent remarks pertaining to the fracture characteristics.	
DtRcdLstUpd	Date record last updated	–	Date of data entry (compiled into electronic format) is listed if a row of record has not been modified. The date of last (most recent) update is listed if a row of record has been modified. This date does not indicate which columns of data have been modified; only that records have been updated within a particular row. Dates are listed as yyyymmdd (4-digit year; 2-digit month; 2-digit day).	
URLAdr	URL address	–	Link to online website and database.	

Appendix E. Hydraulic-Property Database, Nevada Test Site and Vicinity, Nye County, Nevada.

Hydraulic-property data were compiled for both underground and surface sites located on and around the NTS. Appendix E data are available at URL: http://pubs.usgs.gov/ds/2007/297/.

Table E1. Description of Hydraulic-Property Database field contents.

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SrtOrdUSGS	USGS NTS sort order	–	Emplacement and exploratory holes typically are displayed together. Many sites also have multiple completion intervals within the same hole. Therefore, a sort order number is assigned to all USGS sites associated with DOE and/or DOD projects in Nevada. This field is modified as new sites are added.	
UnqNoUSGS	USGS NTS unique number	–	Spatial (*X*-*Y*) coordinates are unavailable at some locations. Therefore, USGS site identification numbers cannot be established in the USGS NWIS database Sitefile for these sites. Because NWIS site identification numbers cannot be assigned to all sites, it is necessary to assign a unique site number to all USGS sites associated with USGS DOE/DOD projects in Nevada. Although the unique numbers were initially assigned in the same order as the USGS NTS sort order, new sites are assigned the next available sequential number.	
NTSArea	NTS area	–	NTS Administrative Area number (see fig. 1). Entries are listed in **bold** type where sites are located in areas other than the hole name implies. For example, USGS hole name **UE-10j** is actually located in NTS area **08**.	
HleNmeUSGS	USGS hole name	–	USGS hole name designation. Entries are listed in bold type where sites are located in areas other than the hole name implies.	
HleTstSeq	Hole test sequence number	–	Sequence of testing conducted at each specific borehole or drift, listed in ascending order by date and time.	
TstIntNo	Test interval number	–	Sequence of tested interval.	
TstIntSeq	Test interval sequence number	–	Sequence of tests, when multiple tests are reported within a test interval.	
TstIntTopft	Test interval top (ft)	–	Depth to top of tested interval; in feet below land surface for boreholes and shafts; in feet from portal opening for tunnels and drifts.	
TstIntBtmft	Test interval bottom (ft)	–	Depth to bottom of tested interval; in feet below land surface for boreholes and shafts; in feet from portal opening for tunnels and drifts.	
TstNo	Test number	–	Number or zone of test, as recorded on field sheets.	
TstTyp	Test type	–	Typical testing types are: bailing, injection, laboratory, pumping, and swabbing.	

Table E1. Description of Hydraulic-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
TstPhs	Test phase	–	Phases of testing are: initializing, injection, pumping, recovery, suspended, and swabbing.	
TstRunNo	Test run number	–	Cumulative number of swabbing runs or trips in the borehole.	
TstDur	Test duration	–	Length of test; as hours, minutes, and seconds.	
TstRmk	Test remarks	–	Pertinent comments concerning test data.	
RtYldTst	Test rate or yield	–	Yield or rate of injection.	
RtYldUntTst	Test rate or yield units	–	The conversion factor [448.83117] is used to convert between gallons per minute (gpm) and cubic feet per second (cfs).	
RtYldRmkTst	Test rate or yield remarks	–	Pertinent comments concerning rate or yield data.	
RdgFlwmtr	Flowmeter reading	–	Totalizing flowmeter readings.	
UntFlwmtr	Flowmeter units	–	Normally gallons [(325,851 gallons = 1 acre-foot) and (gallons * 3.78533 = liters)].	
RmkFlwmtr	Flowmeter remarks	–	Pertinent comments concerning flowmeter data.	
RdgStfGg	Staff gauge reading	–	Depth to water in storage tank used for injection of water.	
UntStfGg	Staff gauge units	–	Normally feet [feet * 0.3048 = meters].	
RmkStfGg	Staff gauge remarks	–	Pertinent comments concerning staff gage data.	
QTst	Test quantity	–	Total quantity withdrawn from or injected into the borehole.	
QUntTst	Test quantity units	–	Normally gallons [(325,851 gallons = 1 acre-foot) and (gallons * 3.78533 = liters)].	
QRmkTst	Test quantity remarks	–	Pertinent comments concerning quantity data.	
CalcDtTm	Calculated date/time	–	Calculated from data contained in the following Date, Time, and Elapsed or cumulative time fields.	
Date	Date	–	Calendar date, as century, year, month, and day.	
Time	Time	–	Clock time (24-hour -or- military), as hour and minute.	
TmElapsCum	Elapsed or cumulative time	–	Elapsed or cumulative time, in minutes, since testing or recovery commenced.	
WLBlwMP	Depth to water below measuring point	–	Depth-to-water measurement, in feet or meters below the measuring point [“-----” indicates time listed but no water level recorded or other activity performed].	
WLUnt01	Depth to water units	–	Normally meters [meters / 0.3048 = feet].	
WLRmk01	Depth to water remarks	–	Pertinent comments concerning depth-to-water data.	
RdgAirlnGg	Airline gauge reading	–	Normally pounds per square inch.	
UntAirlnGg	Airline gauge units	–	Multiply psi * 2.31 to convert to feet of water.	
RmkAirlnGg	Airline gauge remarks	–	Pertinent comments concerning airline data.	

Table E1. Description of Hydraulic-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
StatWLBlwMP	Static water level below measuring point	–	Static (undisturbed) water level.	
TstWLBlwMP	Testing water level below measuring point	–	Maximum water level during testing.	
WLUnt02	Water level units	–	Normally feet [feet * 0.3048 = meters].	
WLRmk02	Water level remarks	–	Pertinent comments concerning water-level data.	
Drawdown	Drawdown	–	Change in depth to water during testing.	
UntDrawdown	Drawdown units	–	Normally meters [meters / 0.3048 = feet].	
RmkDrawdown	Drawdown remarks	–	Pertinent comments concerning drawdown data.	
TypPacker	Packer type	–	Manufacturer or model name of straddle-packer tool.	
DiamPacker	Packer diameter	–	Uninflated diameter of packer unit.	
SpacePacker	Packer spacing	–	Distance between bottom of upper and top of lower packer.	
UntPacker	Packer units	–	Normally inches and feet [feet * 0.3048 = meters].	
RmkPacker	Packer remarks	–	Pertinent comments concerning straddle-packer data.	
TypPump	Pump type	–	Manufacturer or model name of pump.	
IntDthPump	Pump intake depth	–	Depth to pump intake.	
UntPump	Pump units	–	Normally feet [feet * 0.3048 = meters].	
RmkPump	Pump remarks	–	Pertinent comments concerning pump data.	
SizeStorTnk	Storage tank size	–	Dimensions of storage tank, as width × length × height.	
SizeUntStorTnk	Storage tank size units	–	Normally feet [feet * 0.3048 = meters].	
CapStorTnk	Storage tank capacity	–	Volume of water storage tank will hold.	
CapUntStorTnk	Storage tank capacity units	–	Normally gallons [(325,851 gallons = 1 acre-foot) and (gallons * 3.78533 = liters)].	
RmkStorTnk	Storage tank remarks	–	Pertinent comments concerning storage tank data.	
DthQLn	Discharge line depth	–	Depth to bottom of discharge line.	
DthUntQLn	Discharge line depth units	–	Normally feet [feet * 0.3048 = meters].	
SzQLn	Discharge line size	–	Inside diameter (if available) of discharge line.	
SzUntQLn	Discharge line size units	–	Normally inches [Divide by 12 and multiply by 0.3048 to obtain meters].	
RefQLn	Discharge line reference	–	Note whether diameter is expressed as inside or outside dimensions.	
CapQLn	Discharge line capacity	–	Volume of water discharge line will transmit.	

Table E1. Description of Hydraulic-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
CapUntQLn	Discharge line capacity units	–	Normally listed as gallons per foot.	
RmkQLn	Discharge line remarks	–	Pertinent comments concerning discharge line data.	
SpecCap	Specific capacity	–	Yield per unit of drawdown.	
UntSpecCap	Specific capacity units	–	Normally expressed as gallons per minute per foot of drawdown.	
RmkSpecCap	Specific capacity remarks	–	Pertinent comments concerning specific capacity data.	
SatHydCond	Saturated hydraulic conductivity	–	Saturated hydraulic conductivity (water movement through saturated media).	
HydCondUnt	Hydraulic conductivity units	–	Reporting units.	
HydCondMth	Hydraulic conductivity method	–	Method used to measure hydraulic conductivity.	
HydCondRmk	Hydraulic conductivity remarks	–	Pertinent comments concerning hydraulic conductivity data.	
TWtr	Temperature water	–	Water temperature, as degrees.	
TIntlWtr	Temperature initial water	–	Initial (pre-testing) water temperature, as degrees.	
TMaxWtr	Temperature maximum water	–	Maximum water temperature, as degrees.	
TUnt	Temperature units	–	Normally Celsius [(Celsius * 1.8) + 32 = Fahrenheit].	
TRmk	Temperature remarks	–	Pertinent comments concerning temperature data.	
CondWtr	Conductivity water	–	Specific conductance (reciprocal of resistivity) of the water.	
CondUnt	Conductivity units	–	Reporting units are micromhos per centimeter [micromhos have been renamed to the numerically equivalent microsiemens].	
CondRmk	Conductivity remarks	–	Pertinent comments concerning specific conductance data.	
pHWtr	pH water	–	Hydrogen ion activity (concentration); expressed as the negative base-10 log of the hydrogen-ion activity, in moles per liter.	
pHRmk	pH remarks	–	Pertinent comments concerning pH data.	
MajProdZn	Major producing zone(s)	–	Depth(s) to top and bottom of major a major producing zone(s).	
LthMajProdZn	Major producing zone lithology	–	Lithologic description or stratigraphic unit adjacent to major producing zone(s).	

Table E1. Description of Hydraulic-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
UntMajProdZn	Major producing zone units	–	Normally feet [feet * 0.3048 = meters].	
RmkMajProdZn	Major producing zone remarks	–	Pertinent comments concerning major producing zone data.	
ElvRP29ft	Reference point elevation NGVD29 (ft)	–	Elevation of reference (measuring) point, in feet above mean sea level; National Geodetic Vertical Datum of 1929 (NGVD29).	
HeightRP	Reference point height	–	Height of reference (measuring) point, in feet above land surface.	
DscRP	Reference point description	–	Description of the reference (measuring) point.	
UntRP	Reference point units	–	Normally feet [feet * 0.3048 = meters].	
RmkRP	Reference point remarks	–	Pertinent comments concerning measuring point data.	
AnlyzAgy	Analyzing agency	–	Agency that performed the sample analyses.	
AnlyzAgy	Analyzing agency	Birdwell	Birdwell Division of Seismograph Service Corporation (SSC).	
AnlyzAgy	Analyzing agency	BN	Bechtel Nevada (BN).	
AnlyzAgy	Analyzing agency	CL	Core Laboratories, Inc. (CL), Bakersfield, California; Dallas, Texas.	
AnlyzAgy	Analyzing agency	DTRA	DOD, Defense Threat Reduction Agency (DTRA).	
AnlyzAgy	Analyzing agency	DRI	Desert Research Institute (DRI).	
AnlyzAgy	Analyzing agency	DS	Daniel B. Stephens and Associates, Inc. (DS), Albuquerque, NM.	
AnlyzAgy	Analyzing agency	F&S	Fenix and Scisson, Inc. (F&S).	
AnlyzAgy	Analyzing agency	FSN	Fenix and Scisson of Nevada (FSN).	
AnlyzAgy	Analyzing agency	H&N	Holmes and Narver, Inc. (H&N).	
AnlyzAgy	Analyzing agency	LANL	Los Alamos National Laboratory (LANL).	
AnlyzAgy	Analyzing agency	LLNL	Lawrence Livermore National Laboratory (LLNL).	
AnlyzAgy	Analyzing agency	NSTec	National Security Technologies, LLC (NSTec).	
AnlyzAgy	Analyzing agency	NTL	Nevada Testing Laboratories, LTD. (NTL).	
AnlyzAgy	Analyzing agency	PTL	Pittsburgh Testing Laboratory (PTL), Salt Lake City, Utah.	
AnlyzAgy	Analyzing agency	REECo	Reynolds Electrical and Engineering Company (REECo).	
AnlyzAgy	Analyzing agency	RSN	Raytheon Services Nevada (RSN).	
AnlyzAgy	Analyzing agency	SNL	Sandia National Laboratories (SNL).	

Table E1. Description of Hydraulic-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
AnlyzAgy	Analyzing agency	TT	Terra Tek, Inc. (TT), Salt Lake City, Utah, a Schlumberger company; sometimes referred to as TerraTek Research.	
AnlyzAgy	Analyzing agency	UI	University of Illinois (UI).	
AnlyzAgy	Analyzing agency	USACE	U.S. Army Corps of Engineers (USACE).	
AnlyzAgy	Analyzing agency	USGS	USGS.	
DatSrc	Data source	–	Agency that reported hydraulic-property data.	
DatSrc	Data source	BN	Bechtel Nevada (BN).	
DatSrc	Data source	DTRA	DOD, Defense Threat Reduction Agency (DTRA).	
DatSrc	Data source	DRI	Desert Research Institute (DRI).	
DatSrc	Data source	DS	Daniel B. Stephens and Associates, Inc. (DS), Albuquerque, NM.	
DatSrc	Data source	F&S	Fenix and Scisson, Inc. (F&S).	
DatSrc	Data source	FSN	Fenix and Scisson of Nevada (FSN).	
DatSrc	Data source	IT Corp.	International Technology Corporation (IT Corp., purchased by Shaw Group, Inc.).	
DatSrc	Data source	LANL	Los Alamos National Laboratory (LANL).	
DatSrc	Data source	LLNL	Lawrence Livermore National Laboratory (LLNL).	
DatSrc	Data source	NSTec	National Security Technologies, LLC (NSTec).	
DatSrc	Data source	RSN	Raytheon Services Nevada (RSN).	
DatSrc	Data source	SNJV	Stoller-Navarro Joint Venture (SNJV).	
DatSrc	Data source	USGS	USGS.	
RcdTypDsc	Record type or description	–	Record description and/or document type.	
RcdTypDsc	Record type or description	BN/PF	Bechtel Nevada (BN) Project Files (PF).	
RcdTypDsc	Record type or description	DTRA/PF	DOD, Defense Threat Reduction Agency (DTRA) Project Files (PF).	
RcdTypDsc	Record type or description	DRI/PF	Desert Research Institute (DRI) Project Files (PF).	
RcdTypDsc	Record type or description	DS/LR	Daniel B. Stephens and Associates, Inc. (DS) Laboratory Report (LR).	
RcdTypDsc	Record type or description	F&S/PF	Fenix and Scisson, Inc. (F&S) Project Files (PF).	
RcdTypDsc	Record type or description	FSN/PF	Fenix and Scisson of Nevada (FSN) Project Files (PF).	

Table E1. Description of Hydraulic-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
RcdTypDsc	Record type or description	IT Corp./PF	International Technology Corporation (IT Corp.) Project Files (PF).	
RcdTypDsc	Record type or description	LANL/PF	Los Alamos National Laboratory (LANL) Project Files (PF); referred to as “Blue Folders.”	
RcdTypDsc	Record type or description	LLNL/PF	Lawrence Livermore National Laboratory (LLNL) Project Files (PF).	
RcdTypDsc	Record type or description	NSTec/PF	National Security Technologies, LLC. (NSTec) Project Files (PF).	
RcdTypDsc	Record type or description	RSN/PF	Raytheon Services Nevada (RSN) Project Files (PF).	
RcdTypDsc	Record type or description	SNJV/PF	Stoller-Navarro Joint Venture (SNJV) Project Files (PF).	
RcdTypDsc	Record type or description	USGS/PF	USGS Project Files (PF).	
RptRef	Report reference	–	Published report that contains hydraulic-property data. A complete list of acronyms and abbreviations used in USGS and other reports is included in the usgs_rpt and nts_acr_abv worksheets in the nts_hyd_pty spreadsheet (appendix E). **NOTE: [USGS Technical Letters are considered internal correspondence and are not available for public release unless the report has been assigned a USGS Open-File Report number. Technical Letters prepared under the USGS Hydrologic Resource Management Program (HRMP, formerly Hydrology/Radionuclide Migration Program) and assigned “blanket open-file status” are designated “USGS-474-number.” Technical Letters prepared under the USGS Yucca Mountain Program (YMP) and assigned “blanket open-file status” are designated “USGS-1543-number.” Furthermore, some reports prepared by the National Laboratories and the various DOE and DOD subcontractors may also be considered internal correspondence and not available for public release. Users interested in these reports must check with the source agency to determine availability].**	
Invst	Investigators	–	Authors and/or investigators.	
RecLoc	Record location	–	Physical location of hydraulic-property record.	
HleTyp	Hole type	–	Type of vertical or horizontal drilling or excavation.	
HleTyp	Hole type	Borehole	Vertical surface location; includes wells and vertical test holes.	
HleTyp	Hole type	Crater	Vertical surface location.	
HleTyp	Hole type	Drift	Horizontal underground location; includes tunnels and horizontal test holes.	
HleTyp	Hole type	Multiple Wells	Multiple wells.	
HleTyp	Hole type	Outcrop	Surface location.	
HleTyp	Hole type	Shaft	Vertical surface location.	

Table E1. Description of Hydraulic-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
HleTyp	Hole type	Spring	Spring.	
HleTyp	Hole type	Streambed	Streambed.	
HleTyp	Hole type	Surface	Surface location.	
HleTyp	Hole type	Trench	Horizontal surface location.	
HleTyp	Hole type	Unknown	Hole type not known.	
TnlDftConSta	Tunnel or drift construction station	–	Construction station at collar location (portal opening), for tunnels and drifts (i.e. - 9+17 is 917 ft; 10+72,195' is a 195 ft hole at the 1,072 ft station; etc.).	
ConStaRmk	Construction station remarks	–	Remarks concerning the portal opening (collar location), for tunnels and drifts (i.e. - In U-12e.14 main drift; Alcove; Face; Invert; Lft Rib; Rt Rib; etc.).	
NVSPE27	Nevada SPCS Easting NAD27	–	Nevada state plane coordinates (SPCS), Easting, central zone, in feet; North American Datum of 1927 (NAD27).	
NVSPN27	Nevada SPCS Northing NAD27	–	Nevada state plane coordinates (SPCS), Northing, central zone, in feet; North American Datum of 1927 (NAD27).	
NVSPErr	SPCS error	–	SPCS error, in feet. Blank if unknown.	
AltPorOpn29ft	Altitude at portal opening NGVD29 (ft)	–	Altitude at the collar location of the portal opening, for tunnels and drifts; in feet above mean sea level; National Geodetic Vertical Datum of 1929 (NGVD29).	
BngPorOpnDeg	Bearing from portal opening (degrees)	–	Bearing from the portal opening, for tunnels and drifts; in degrees, minutes, and seconds or decimal degrees (i.e. - S0720958W is South, 72 degrees, 9 minutes, 58 seconds West; N0325529E is North, 32 degrees, 55 minutes, 29 seconds East; N052.75W is North 52 and three-quarter degrees West; etc.)	
IncPorOpnDeg	Inclination from portal opening (degrees)	–	Inclination from the portal opening, for tunnels and drifts; in degrees, minutes, and seconds or decimal degrees (i.e. - 0045825 is a hole 4 degrees, 58 minutes, 25 seconds above horizontal; 2700000 is a vertical hole below horizontal; 0900000 is a vertical hole above horizontal; 0000000 and 1800000 are horizontal holes; 0150000 and 1650000 are holes 15 degrees up (above horizontal); 3150000 and 2250000 are holes 45 degrees down (below horizontal); 356.5 is a hole 3 and one-half degrees below horizontal; 170.25 is 9 and three-quarter degrees above horizontal; etc.). Inclinations are linked to bearings, so values near horizontal for holes bearing north or east would be added to zero for holes inclined above horizontal and subtracted from 360 for holes below horizontal; conversely, values near horizontal for holes bearing south or west would be subtracted from 180 for holes inclined above horizontal and added to 180 for holes below horizontal.	

Table E1. Description of Hydraulic-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
AltLndSur29ft	Altitude of land surface NGVD29 (ft)	–	Altitude of land surface within a reasonable proximity of the site; in feet above mean sea level; National Geodetic Vertical Datum of 1929 (NGVD29). This is an average of the surrounding ground-surface elevation. If the original surface has been altered, estimate the altitude based on nearby unaltered terrain.	
AltMth	Altitude method	–	Method used to determine altitude of land surface.	
AltMth	Altitude method	A	Altimeter.	
AltMth	Altitude method	D	Differentially corrected Global Positioning System (DGPS).	
AltMth	Altitude method	G	Global Positioning System (GPS).	
AltMth	Altitude method	I	Interferometric Synthetic Aperture Radar (IfSAR), airplane.	
AltMth	Altitude method	J	Light Detection And Ranging (LiDAR), airplane.	
AltMth	Altitude method	L	Level or other surveying method.	
AltMth	Altitude method	M	Interpolated from topographic map [report accuracy as ± one-half the contour interval (or supplementary contour interval) specified on the quadrangle].	
AltMth	Altitude method	N	Interpolated from digital elevation model (DEM).	
AltMth	Altitude method	R	Reported.	
AltMth	Altitude method	U	Unknown.	
AltAcc	Altitude accuracy	–	Altitude accuracy; in feet (decimal values for accuracies less than 1 ft).	
AltAcc	Altitude accuracy	U	Unknown.	
SitCmpDt	Site completion date	–	Date hole construction completed.	
HleDthft	Hole depth (ft)	–	Hole depth; in feet below land surface for boreholes and shafts; in feet from portal opening for tunnels and drifts.	
RedBkHleNo	Redbook hole number	–	Redbook hole numbers are currently assigned to new holes completed at the NTS by National Security Technologies, LLC (NSTec). Entries are listed in **bold** type where sites are located in areas other than the hole name implies.	

Table E1. Description of Hydraulic-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
RedBkHleNo	Redbook hole number	–	Redbook hole numbers listed in the Raytheon Services Nevada (RSN) Nevada Test Site Drilling and Mining Summary (last updated 12-31-90) and previously in the Fenix and Scisson of Nevada NTS Drilling and Mining Summary (last updated 06-30-89; formerly Fenix and Scisson, Inc.) were assigned according to the type of hole drilled or mined, site location (NTS area), and sequence code for the consecutive order in which the hole was drilled, mined, or recompleted. Emplacement holes for nuclear weapons tests begin with the letter U, followed by a dash (-), NTS area number (fig. 1), and sequence code (letters a-z, aa-az, ba-bz, …, za-zz). Exploratory holes follow the same naming convention as emplacement holes, but begin with the letters UE. Holes that begin with the letter U but were drilled or mined specifically to provide data that could not be collected from an emplacement hole follow the emplacement hole naming convention, but are assigned incremental letters or numbers, or both following the sequence code. The suffix letters indicate: [#, satellite hole; CH, cable hole; Ex. or Expl., exploratory hole; HTH, hydrologic test hole; Inst., instrument hole; ITS, integrated test system; PPS, pre-postshot hole; PS, post-shot hole; RNM, radionuclide migration hole; RWMS, radioactive waste management site; and S, substitute hole]. There are numerous exceptions to the standard naming convention. The prefix letters indicate: [HTH, hydrologic test hole; J, Jackass Flat; and RNM, radionuclide migration]. Numbers and letters following the dash in the exceptions represent sequence of site drilling or mining, not NTS location. Hole type also is commonly listed after the hole designation. For example: [Access Shaft; Cable Hole; Expl. Hole; Instrument; LOS (Line Of Sight) Drift; Sidetrack; Reentry Mining; Tunnel; Vent Hole; and Zero Station].	
RedBkHleNo	Redbook hole number	–	USGS DOE project-related holes in Central Nevada follow a similar naming convention. However emplacement holes begin with the letters UC and exploratory holes begin with the letters UCE.	
RedBkHleNo	Redbook hole number	–	USGS Yucca Mountain Project (YMP) holes at the NTS follow the exploratory hole naming convention. Offsite YMP holes begin with the letters USW to indicate underground southern Nevada waste. The suffix letters indicate: [G, geologic hole; GA, geologic angle hole; GU, geologic unsaturated zone hole; H, hydrologic hole; MX, missile-experimental hole (drilled for U.S. Air Force [USAF] MX Missile-Siting Investigation); N, neutron hole; p, Paleozoic or pre-Tertiary hole; RF, repository facility hole; UZ, unsaturated zone hole; V, volcanic hole; VSE, vertical shelter exploratory hole (drilled for USAF MX Missile-Siting Investigation); and WT, water table hole].	
RedBkHleNo	Redbook hole number	–	Environmental Restoration Program (ERP) holes at the NTS begin with the letters ER, followed by a dash, NTS area number (fig. 1), a dash, and an incremental sequence number. The NTS area number is replaced by suffix letters for ERP holes located offsite. The suffix letters indicate: [EC, area at the USAF Nellis Air Force Base Range (NAFBR) where the holes were drilled; and OV, Oasis Valley].	

Table E1. Description of Hydraulic-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
RedBkHleNo	Redbook hole number	–	LLNL Containment Program Data Base hole names are 10 characters in length. The first character identifies the site location of the hole: [U, Nevada Test Site; C, Central Nevada Test Site; A, Amchitka Test Site; and O, offsite hole]. The second and third characters identify either the right-justified Area number for an NTS hole, or the two-letter state abbreviation (U.S. Postal Service abbreviation) for an offsite hole: [U 2, NTS hole in Area 2; U20, NTS hole in Area 20; and ONV, offsite hole in Nevada]. The fourth character is reserved for specially defined areas at the NTS: [U 9I, NTS hole in Area 9, in the ITS area]. Characters 5-10 identify the hole complex or group of holes (of different types) related to the emplacement hole. This may include letters or numbers. For an NTS hole, the fifth and sixth characters are alphabetical descriptors and usually complete the common hole name for an emplacement hole: [U 2 c, NTS hole in Area 2; U 2 ca, NTS hole in Area 2, drilled after U 2 c; and U 2 cb, NTS hole in Area 2, drilled after U 2 ca]. For offsite holes, these characters will indicate county name, on a limited space basis: [ONV NYE, offsite hole in Nevada, Nye County; and OCO RBL, offsite hole in Colorado, Rio Blanco County]. These characters may also indicate project identifiers: [U 1 RNM, NTS hole in Area 1, Radionuclide Migration Program; and U 12 ER, NTS hole in Area 12, Environmental Restoration Program]. LLNL Containment Program Data Base hole types are: [A, access; B, rad chem; C, core; D, Waterways experiment Station (WES); E, exploratory; F, tunnel; G, auger, crack investigation; H, emplacement (H A or H B is a centerpunch emplacement hole); I, instrument; J, PINEX or LOS; K, escape; L, cable; M, hydrologic test hole; N, tracer and sample, foil recovery; O, tunnel dynamics; P, post test; Q, seismic, high explosive; R, re-entry (R-S is a reentry shaft); S, shaft (W/S is a whipstock hole); T, test hole (many types); U, post-test hole, in crater; V, vent; W, water supply; X, pre-post test; Y, abandoned; Z, waste storage; 1, rack assembly; 2, dump; 3, oil well; 4, gas well; 5, geothermal well; and ?, unknown hole type]. Multiple uses of a hole are indicated by consecutively adding hole type abbreviations in this field. If the hole is closely associated with another hole, or if it also is known by another name, this is indicated by /____. For example, the hole name: [U 2 bt HE/U2BU H] means that U 2 bt was initially an emplacement hole that became an exploratory hole. U 2 bt also is an exploratory hole for the nearby emplacement hole U 2 bu.	
FmrOthHleNme	Former or other hole name	–	Former or other names utilized for holes.	
AgyCdUSGSNWIS	NWIS agency code	USGS	USGS NWIS code to indicate the reporting agency. All sites currently populated in the hydraulic-property database are assigned as USGS.	
SitIDNoUSGSNWIS	NWIS site identification number	–	USGS NWIS site identification number.	

Table E1. Description of Hydraulic-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SitIDNoUSGSNWIS	NWIS site identification number	–	Downstream order numbers are assigned for surface-water, on-stream, sites. The first two digits of the station number indicate the part or major drainage system formerly used for USGS Water-Supply Papers entitled “Surface Water Supply of the United States” and the remaining digits indicate the downstream order within the part. This site number is left-justified. Although downstream identification numbers have been converted to a variable length format, with up to 14 digits available, 8 digits are normally assigned.	
SitIDNoUSGSNWIS	NWIS site identification number	–	Numbering system for sites on open water bodies, off-channel sites, wells, springs, etc., is based on the grid system of latitude and longitude. Although this number is initially determined from the best known latitude/longitude location, plus a 2-digit sequence number for the number of sites located at those coordinates, it retains no locational relevance once the site is created in the database. The overall designation consists of 15 digits. The values of latitude and longitude are updated as better coordinates become available, and should always be used for locating sites or plotting locations.	
Lat27	Latitude NAD27	–	Latitude; in degrees, minutes, and seconds [two digits are available for decimal seconds]; North American Datum of 1927 (NAD27).	
Lng27	Longitude NAD27	–	Longitude; in degrees, minutes, and seconds [two digits are available for decimal seconds]; North American Datum of 1927 (NAD27).	
LocMth	Location method	–	Method used to determine latitude and longitude coordinates.	
LocMth	Location method	C	Calculated from land net.	
LocMth	Location method	D	Differentially corrected Global Positioning System (DGPS).	
LocMth	Location method	G	Global positioning system (GPS), uncorrected [Standard Positioning Service (SPS) and Precise Positioning Service (PPS)].	
LocMth	Location method	L	Long-range navigation (Loran) system.	
LocMth	Location method	M	Interpolated from map.	
LocMth	Location method	N	Interpolated from digital map.	
LocMth	Location method	R	Reported.	
LocMth	Location method	S	Transit, theodolite, or other surveying method.	
LocMth	Location method	U	Unknown.	
LocAcc	Location accuracy	–	Accuracy of latitude and longitude coordinates.	
LocAcc	Location accuracy	H	Hundredth second.	
LocAcc	Location accuracy	1	Tenth second.	
LocAcc	Location accuracy	5	Half second.	
LocAcc	Location accuracy	S	Second.	
LocAcc	Location accuracy	R	Three seconds.	

Table E1. Description of Hydraulic-Property Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
LocAcc	Location accuracy	F	Five seconds.	
LocAcc	Location accuracy	T	Ten seconds.	
LocAcc	Location accuracy	M	Minute.	
LocAcc	Location accuracy	U	Unknown.	
DecLat83	Decimal latitude NAD83	–	Latitude, in decimal degrees [automatically generated by the NWIS system software]; North American Datum of 1983 (NAD83).	
DecLng83	Decimal longitude NAD83	–	Longitude, in decimal degrees [automatically generated by NWIS system software]; North American Datum of 1983 (NAD83).	
UTME27m	UTM Easting NAD27 (meters)	–	Universal Transverse Mercator coordinates, Easting, zone 11, in meters; North American Datum of 1927 (NAD27).	
UTMN27m	UTM Northing NAD27 (meters)	–	Universal Transverse Mercator coordinates, Northing, zone 11, in meters; North American Datum of 1927 (NAD27).	
UTMErr	UTM error	–	UTM error, in meters. Blank if unknown.	
Rmk	Remarks	–	Pertinent remarks pertaining to the hydraulic properties.	
DtRcdLstUpd	Date record last updated	–	Date of data entry (compiled into electronic format) is listed if a row of record has not been modified. The date of last (most recent) update is listed if a row of record has been modified. This date does not indicate which columns of data have been modified; only that records have been updated within a particular row. Dates are listed as yyyymmdd (4-digit year; 2-digit month; 2-digit day).	
URLAdr	URL address	–	Link to online website and database.	

This page left intentionally blank

Appendix F. NTS USGS Databases, Nevada Test Site and Vicinity, Nye County, Nevada.

Most redundant data have been removed from the rock-sample, lithologic-description, rock-property, fracture-characteristic, and hydraulic-property tables and moved into a separate site-characteristic table. These data tables were developed in Microsoft© Excel as stand-alone databases and are offered in Microsoft© Access for quicker response time. The UnqNoUSGS field links the tables and the redundant SrtOrdUSGS field is retained in each table to maintain intended sort order. Furthermore, the redundant MapUntSym, LocIDLANL, SamIDLANL, and SplIDLANL fields are retained in the rock-sample, lithologic-description, and fracture-characteristic tables for both informational and linking purposes. The UnqNoUSGS field also is listed prior to the SrtOrdUSGS field in the hydraulic-property table for sorting purposes. Field contents are the same as described in tables A1-E1. However, the Site-Characteristic Database table includes additional fields described below. Appendix F data are available at URL: http://pubs.usgs.gov/ds/2007/297/.

Table F1. Description of Site-Characteristic Database field contents.

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SrtOrdUSGS	USGS NTS sort order	–	Emplacement and exploratory holes typically are displayed together. Many sites also have multiple completion intervals within the same hole. Therefore, a sort order number is assigned to all USGS sites associated with DOE and/or DOD projects in Nevada. This field is modified as new sites are added.	
UnqNoUSGS	USGS NTS unique number	–	Spatial (X-Y) coordinates are unavailable at some locations. Therefore, USGS site identification numbers can not be established in the USGS NWIS database Sitefile for these sites. Because NWIS site identification numbers can not be assigned to all sites, it is necessary to assign a unique site number to all USGS sites associated with USGS DOE/DOD projects in Nevada. Although the unique numbers were initially assigned in the same order as the USGS NTS sort order, new sites are assigned the next available sequential number.	
DtUnqNoAsgn	Date unique number assigned	–	Date USGS NTS unique number assigned; as yyyymmdd (4-digit year; 2-digit month; 2-digit day).	
NTSArea	NTS area	–	NTS Administrative Area number (see fig. 1). Entries are listed in **bold type** where sites are located in areas other than the hole name implies. For example, USGS hole name **U - 2ao** is actually located in NTS area **09**.	
HleNmeUSGS	USGS hole name	–	USGS hole name designation. Entries are listed in bold type where sites are located in areas other than the hole name implies.	
FmrOthHleNme	Former or other hole name	–	Former or other names utilized for holes.	
HstFleSmpSitNmeUSGS	USGS historical file sample site name	–	Name listed on original site record contained in historical files located in the USGS Mercury Core Library at the NTS or the USGS Office in Henderson, Nevada.	
SitSrc	Site source	–	Source of site data.	

Table F1. Description of Site-Characteristic Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
SitSrc	Site source	BEIDMS	Bechtel Nevada Environmental Integrated Data Management System (BEIDMS) Oracle database record.	
SitSrc	Site source	BM	Binocular Microscope (BM) record.	
SitSrc	Site source	fct_chr	Fracture-characteristic (fct_chr) record.	
SitSrc	Site source	FN	Field notes (FN) record.	
SitSrc	Site source	hyd_pty	Hydraulic-property (hyd_pty) record.	
SitSrc	Site source	Implied	Implied by sequence or other indication of hole.	
SitSrc	Site source	LANL	Los Alamos National Laboratory (LANL) record.	
SitSrc	Site source	LLNL	Lawrence Livermore National Laboratory (LLNL) record.	
SitSrc	Site source	lth_dsc	Lithologic-description (lth_dsc) record.	
SitSrc	Site source	NWIS	USGS NWIS record.	
SitSrc	Site source	RB	Redbook (RB) sites listed in the Raytheon Services Nevada (RSN) NTS Drilling and Mining Summary (last updated 12-31-90) and previously in the Fenix and Scission of Nevada NTS Drilling and Mining Summary (last updated 6-30-89; formerly Fenix and Scisson, Inc.). Both summaries were referred to as the Redbook.	
SitSrc	Site source	rck_pty	Rock-property (rck_pty) record.	
SitSrc	Site source	rck_smp	Rock-sample (rck_smp) record.	
SitSrc	Site source	TS	Thin section (TS) record.	
Status	Status	–	Status of site data.	
Status	Status	A	Unique LANL site.	
Status	Status	B	Included in BEIDMS Database, but not listed in printed Redbook.	
Status	Status	C	Nevada State Plane or Universal Transverse Mercator Coordinates available.	
Status	Status	G	General (approximate) coordinates available.	
Status	Status	H	Hole name conflict.	
Status	Status	I	Implied by sequence or other indication of hole.	
Status	Status	L	Unique LLNL site.	
Status	Status	M	Multiple completion intervals exist for hole or duplicate site.	
Status	Status	N	Site established in USGS NWIS database.	
Status	Status	R	Listed in printed Redbook, but not included in BEIDMS Database.	
Status	Status	S	Hole segment.	
Status	Status	U	Spatial (x-y-z) coordinates unavailable for hole.	
NTSAreaNmeSrt	NTS area name sort	–	Number assigned to initially sort this data set.	

Table F1. Description of Site-Characteristic Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
CmbHlNmeSrt	Combination hole name sort	–	Combined hole name field; necessary because not all sites have a USGS hole name designation. Entries are listed in **bold type** where sites are located in areas other than the hole name implies.	
BINUGTA	UGTA BIN	–	Underground Test Area (UGTA) Project Borehole Index Number (BIN) listed in the Borehole Site Atlas in the Central Data Repository (CDR) currently maintained by Stoller-Navarro Joint Venture (SNJV).	
MHNLANL	LANL master hole name	–	Los Alamos National Laboratory (LANL) hole name.	
OHNLANL	LANL other hole name	–	Former or other LANL hole names.	
MHNLLNL	LLNL master hole name	–	Lawrence Livermore National Laboratory hole name.	
OHNLLNL	LLNL other hole name	–	Former or other LLNL hole names.	
RedBkAreaPg	Printed Redbook AREA/ PAGE	–	Area and page listed in most recent available printed edition (12/31/1990) of the RSN NTS Drilling and Mining Summary.	
RedBkOrd	Printed Redbook order	–	Order site listed in RSN NTS Drilling and Mining Summary.	
RedBkHleNo	Printed Redbook [Raytheon Services Nevada Nevada Test Site Drilling & Mining Summary HOLE NUMBER (12/31/1990)]	–	The Redbook hole number (HOLE NUMBER) exactly as listed in the RSN NTS Drilling and Mining Summary.	
ClntStaIdBEIDMS	Redbook subset [Bechtel Nevada BEIDMS database CLIENT STATION ID (02/15/2006)]	–	The case-sensitive hole number (Bechtel's CLIENT_STATION_ID) exactly as stored in the Redbook subset of the Bechtel Environmental Integrated Data Management System (BEIDMS) Oracle database.	
SegNmeBEIDMS	BEIDMS SEGMENT NAME	–	The hole segment name (SEGMENT_NAME), as stored in the Redbook subset of Bechtel's BEIDMS database.	
StaIdBEIDMS	BEIDMS STATION ID	–	The upper-cased hole number (STATION_ID) as stored in the Redbook subset of Bechtel's BEIDMS database.	
SrtOrdBEIDMS	BEIDMS SORT ORDER	–	The sort order (SORT_ORDER) number stored in the Redbook subset of Bechtel's BEIDMS database. This number sorts the data in the same order as the printed RSN Redbook.	
StaSeqBEIDMS	BEIDMS STATION SEQ	–	The unique number (STATION_SEQ) stored in the Redbook subset of Bechtel's BEIDMS database.	
RecOwnBEIDMS	BEIDMS RECORD OWNER	–	The record owner (RECORD_OWNER) stored in the Redbook subset of Bechtel's BEIDMS database. REDBOOK designates sites from the Redbook subset of BEIDMS.	

Table F1. Description of Site-Characteristic Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
NVLogNo	Nevada Log number	–	Well Driller's Report number assigned by the Nevada Division of Water Resources (State Engineer).	
NVPmtNo	Nevada Permit number	–	Water Use Permit number issued by the Nevada Division of Water Resources (State Engineer).	
HydArea	Hydrographic area	–	The first three characters represent the hydrographic area and the fourth character represents the hydrographic subarea. For example: [159 - Yucca Flat; 160 - Frenchman Flat; 227A - Fortymile Canyon, Jackass Flats; and 227B - Fortymile Canyon, Buckboard Mesa]. A complete list of codes is included in the dsc_hyd_areas table in the nts_usgs_dbs database (appendix F).	
LocalNo	Local number	–	Township, range, section, section quarters, and sequence number.	
TopoQuad	Topographic quadrangle	–	Name of topographic quadrangle.	
MapScl	Map scale	–	Scale of topographic quadrangle.	
MapScl	Map scale	24000	7.5-minute quadrangles [1:24,000].	
MapScl	Map scale	62500	15-minute quadrangles [1:62,500].	
MapScl	Map scale	100000	30- by 60-minute (or 1-degree) quadrangle [1:100,000].	
MapScl	Map scale	250000	1- by 2-degree {or AMS (U.S. Army Map Service)} quadrangles [1:250,000].	
HleTyp	Hole type	–	Type of vertical or horizontal drilling or excavation.	
HleTyp	Hole type	Borehole	Vertical surface location; includes wells and vertical test holes.	
HleTyp	Hole type	Crater	Vertical surface location.	
HleTyp	Hole type	Drift	Horizontal underground location; includes tunnels and horizontal test holes.	
HleTyp	Hole type	Multiple Wells	Multiple wells.	
HleTyp	Hole type	Outcrop	Surface location.	
HleTyp	Hole type	Shaft	Vertical surface location.	
HleTyp	Hole type	Spring	Spring.	
HleTyp	Hole type	Streambed	Steambed.	
HleTyp	Hole type	Surface	Surface location.	
HleTyp	Hole type	Trench	Horizontal surface location.	
HleTyp	Hole type	Unknown	Hole type not known.	
TnlDftConSta	Tunnel or drift construction station	–	Construction station at collar location (portal opening), for tunnels and drifts (i.e. - 9+17 is 917 feet; 10+72,195' is a 195 feet hole at the 1,072 feet station; etc.).	
ConStaRmk	Construction station remarks	–	Remarks concerning the portal opening (collar location), for tunnels and drifts (i.e. - In U-12e.14 main drift; Alcove; Face; Invert; Lft Rib; Rt Rib; etc.).	
NVSPE27	Nevada SPCS Easting NAD27	–	Nevada state plane coordinates (SPCS), Easting, central zone, in feet; North American Datum of 1927 (NAD27).	

Table F1. Description of Site-Characteristic Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
NVSPN27	Nevada SPCS Northing NAD27	–	Nevada state plane coordinates (SPCS), Northing, central zone, in feet; North American Datum of 1927 (NAD27).	
NVSPErr	SPCS error	–	SPCS error, in feet. Blank if unknown.	
AltPorOpn29ft	Altitude at portal opening NGVD29 (ft)	–	Altitude at the collar location of the portal opening, for tunnels and drifts; in feet above mean sea level; National Geodetic Vertical Datum of 1929 (NGVD29).	
BngPorOpnDeg	Bearing from portal opening (degrees)	–	Bearing from the portal opening, for tunnels and drifts; in degrees, minutes, and seconds or decimal degrees (i.e. - S0720958W is South, 72 degrees, 9 minutes, 58 seconds West; N0325529E is North, 32 degrees, 55 minutes, 29 seconds East; N052.75W is North 52 and three-quarter degrees West; etc.)	
IncPorOpnDeg	Inclination from portal opening (degrees)	–	Inclination from the portal opening, for tunnels and drifts; in degrees, minutes, and seconds or decimal degrees (i.e. - 0045825 is a hole 4 degrees, 58 minutes, 25 seconds above horizontal; 2700000 is a vertical hole below horizontal; 0900000 is a vertical hole above horizontal; 0000000 and 1800000 are horizontal holes; 0150000 and 1650000 are holes 15 degrees up (above horizontal); 3150000 and 2250000 are holes 45 degrees down (below horizontal); 356.5 is a hole 3 and one-half degrees below horizontal; 170.25 is 9 and three-quarter degrees above horizontal; etc.). Inclinations are linked to bearings, so values near horizontal for holes bearing north or east would be added to zero for holes inclined above horizontal and subtracted from 360 for holes below horizontal; conversely, values near horizontal for holes bearing south or west would be subtracted from 180 for holes inclined above horizontal and added to 180 for holes below horizontal.	
AltLndSur29ft	Altitude of land surface NGVD29 (ft)	–	Altitude of land surface within a reasonable proximity of the site; in feet above mean sea level; National Geodetic Vertical Datum of 1929 (NGVD29). This is an average of the surrounding ground-surface elevation. If the original surface has been altered, estimate the altitude based on nearby unaltered terrain.	
AltMth	Altitude method	–	Method used to determine altitude of land surface.	
AltMth	Altitude method	A	Altimeter.	
AltMth	Altitude method	D	Differentially-corrected Global Positioning System (DGPS).	
AltMth	Altitude method	G	Global Positioning System (GPS).	
AltMth	Altitude method	I	Interferometric Synthetic Aperture Radar (IfSAR), airplane.	
AltMth	Altitude method	J	Light Detection And Ranging (LiDAR), airplane.	
AltMth	Altitude method	L	Level or other surveying method.	
AltMth	Altitude method	M	Interpolated from topographic map [report accuracy as +/- one-half the contour interval (or supplementary contour interval) specified on the quadrangle].	
AltMth	Altitude method	N	Interpolated from digital elevation model (DEM).	
AltMth	Altitude method	R	Reported.	

Table F1. Description of Site-Characteristic Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
AltMth	Altitude method	U	Unknown.	
AltAcc	Altitude accuracy	–	Altitude accuracy; in feet (decimal values for accuracies less than 1 foot).	
AltAcc	Altitude accuracy	U	Unknown.	
SitCmpDt	Site completion date	–	Date hole construction completed.	
HleDthft	Hole depth (ft)	–	Hole depth; in feet below land surface for boreholes and shafts; in feet from portal opening for tunnels and drifts.	
AgyCdUSGSNWIS	NWIS agency code	USGS	USGS NWIS code to indicate the reporting agency. Most sites currently populated in the site-characteristic database are assigned as USGS. A complete list of codes is included in the dsc_agency_codes_all_st table (appendix F).	
SitIDNoUSGSNWIS	NWIS site identification number	–	USGS NWIS site identification number.	
SitIDNoUSGSNWIS	NWIS site identification number	–	Downstream order numbers are assigned for surface-water, on-stream, sites. The first two digits of the station number indicate the part or major drainage system formerly used for USGS Water-Supply Papers entitled "Surface Water Supply of the United States" and the remaining digits indicate the downstream order within the part. This site number is left-justified. Although downstream identification numbers have been converted to a variable length format, with up to 14 digits available, 8 digits are normally assigned.	
SitIDNoUSGSNWIS	NWIS site identification number	–	Numbering system for sites on open water bodies, off-channel sites, wells, springs, etc., is based on the grid system of latitude and longitude. Although this number is initially determined from the best known latitude/longitude location, plus a 2-digit sequence number for the number of sites located at those coordinates, it retains no locational relevance once the site is created in the database. The overall designation consists of 15 digits. The values of latitude and longitude are updated as better coordinates become available, and should always be used for locating sites or plotting locations.	
CreateDtUSGSNWIS	Date site created in USGS NWIS Sitefile	–	Date site established in the shared Sitefile of the USGS NWIS database; as yyyymmddhhmmss (4-digit year; 2-digit month; 2-digit day; 2-digit hour; 2-digit minute; 2-digit second).	
Lat27	Latitude NAD27	–	Latitude; in degrees, minutes, and seconds [two digits are available for decimal seconds]; North American Datum of 1927 (NAD27).	
Lng27	Longitude NAD27	–	Longitude; in degrees, minutes, and seconds [two digits are available for decimal seconds]; North American Datum of 1927 (NAD27).	
LocMth	Location method	–	Method used to determine latitude and longitude coordinates.	
LocMth	Location method	C	Calculated from land net.	
LocMth	Location method	D	Differentially-corrected Global Positioning System (DGPS).	

Table F1. Description of Site-Characteristic Database field contents.—Continued

[Access field names longer than 8 characters indicated by red text because longer names may be incompatible with some database and Graphic Information System (GIS) applications. Blank field source indicates not applicable, not available online, or not accessible to the public. **Abbreviations:** DOD, U.S. Department of Defense; DOE, U.S. Department of Energy; NTS, Nevada Test Site; NWIS, National Water Information System; USGS, U.S. Geological Survey; ft, foot; –, not applicable]

Access field name	Excel field name	Field code	Field explanation	Field source
LocMth	Location method	G	Global positioning system (GPS), uncorrected [Standard Positioning Service (SPS) and Precise Positioning Service (PPS)].	
LocMth	Location method	L	Long-range navigation (Loran) system.	
LocMth	Location method	M	Interpolated from map.	
LocMth	Location method	N	Interpolated from digital map.	
LocMth	Location method	R	Reported.	
LocMth	Location method	S	Transit, theodolite, or other surveying method.	
LocMth	Location method	U	Unknown.	
LocAcc	Location accuracy	–	Accuracy of latitude and longitude coordinates.	
LocAcc	Location accuracy	H	Hundredth second.	
LocAcc	Location accuracy	1	Tenth second.	
LocAcc	Location accuracy	5	Half second.	
LocAcc	Location accuracy	S	Second.	
LocAcc	Location accuracy	R	Three seconds.	
LocAcc	Location accuracy	F	Five seconds.	
LocAcc	Location accuracy	T	Ten seconds.	
LocAcc	Location accuracy	M	Minute.	
LocAcc	Location accuracy	U	Unknown.	
DecLat83	Decimal latitude NAD83	–	Latitude, in decimal degrees [automatically generated by the NWIS system software]; North American Datum of 1983 (NAD83).	
DecLng83	Decimal longitude NAD83	–	Longitude, in decimal degrees [automatically generated by NWIS system software]; North American Datum of 1983 (NAD83).	
UTME27m	UTM Easting NAD27 (meters)	–	Universal Transverse Mercator coordinates, Easting, zone 11, in meters; North American Datum of 1927 (NAD27).	
UTMN27m	UTM Northing NAD27 (meters)	–	Universal Transverse Mercator coordinates, Northing, zone 11, in meters; North American Datum of 1927 (NAD27).	
UTMErr	UTM error	–	UTM error, in meters. Blank if unknown.	
Rmk	Remarks	–	Pertinent remarks pertaining to the site characteristics.	
DtRcdLstUpd	Date record last updated	–	Date of data entry (compiled into electronic format) is listed if a row of record has not been modified. The date of last (most recent) update is listed if a row of record has been modified. This date does not indicate which columns of data have been modified; only that records have been updated within a particular row. Dates are listed as yyyymmdd (4-digit year; 2-digit month; 2-digit day).	
URLAdr	URL address	–	Link to online website and database.	

This page left intentionally blank

For more information contact:
Director, Nevada Water Science Center
U.S. Geological Survey
2730 N. Deer Run Road
Carson City, Nevada 89701
http://nevada.usgs.gov