

Central Nevada Test Area, Nevada, Site A Nevada Offsite

This fact sheet provides information about the **Central Nevada Test Area (CNTA), Nevada, Site**. This site is managed by the **U.S. Department of Energy Office of Legacy Management**.

Site Information and History

CNTA is in the Hot Creek Valley of south-central Nevada, approximately 70 miles northeast of Tonopah. CNTA consists of three parcels of withdrawn federal land totaling 2,921 acres. The parcels are spaced approximately 3 miles apart along a roughly north-south line. The total acreage is currently withdrawn from all forms of appropriation associated with mining laws and leasing.

The U.S. Atomic Energy Commission, a predecessor agency of the U.S. Department of Energy (DOE), acquired CNTA in the early 1960s to develop alternative sites to the Nevada National Security Site (formerly known as the Nevada Test Site) for underground nuclear weapons testing. The purpose was to evaluate the environmental and structural effects that might be expected if subsequent, higher-yield underground nuclear tests were conducted in this vicinity. Three boreholes (UC-1, UC-3, and UC-4) were drilled on the three parcels. The underground nuclear test, identified as Faultless, was conducted in the UC-1 emplacement borehole at a depth of 3,200 feet on January 19, 1968. The test resulted in a down-dropped fault block (also referred to as a graben) visible at ground surface. At the detonation depth it created a cavity and chimney that collapsed into the cavity and extends into the overlying valley fill material or alluvium. The faulting and seismic results supported the indication that the site was not favorable for larger detonations. Two additional tests were planned (UC-3 and UC-4 boreholes), but no additional tests were conducted at CNTA.

The Hot Creek Valley fill consists of poorly sorted alluvium composed primarily of volcanic rocks derived from the

adjacent ranges. The alluvium is underlain by volcanic tuff and sedimentary rocks derived from volcanic material and welded tuff interbedded within a volcanic rock sequence.

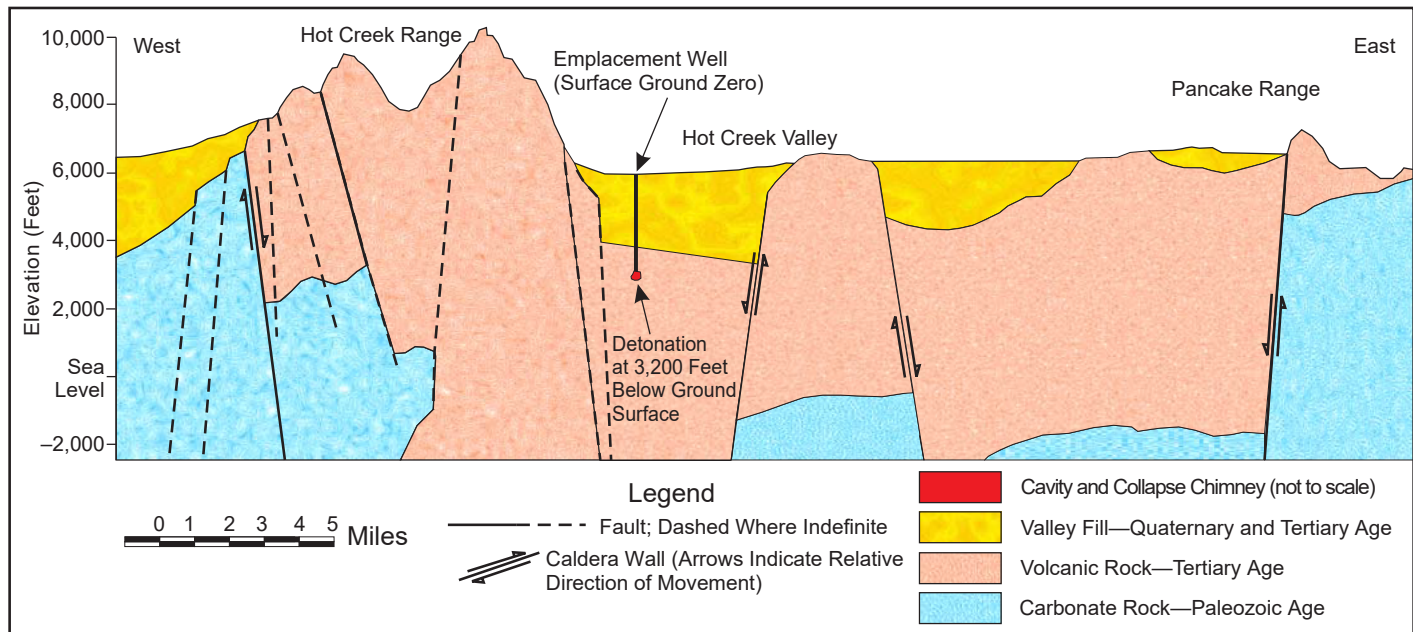
Groundwater occurs in both the alluvial and volcanic sections. The depth to groundwater near the UC-1 emplacement borehole is about 400 feet below ground surface.

Surface Conditions

Drilling operations associated with the three boreholes (UC-1, UC-3, and UC-4) resulted in areas of surface contamination identified as Corrective Action Unit (CAU) 417. This CAU comprised 34 corrective action sites. DOE completed closure of these sites using a variety of methods, including removing industrial scrap, excavating and removing underground storage tanks and septic tanks, and excavating and removing contaminated soil. Mud pits used to contain drilling fluids were contaminated with diesel fuel and trace amounts of lead and chromium. DOE closed two of the corrective action sites (Central Mud Pit associated with the UC-1 emplacement borehole and Mud Pit C associated with the UC-4 borehole) by installing engineered caps and closed nine additional sites through use of institutional controls. The Closure Report for CAU 417 was approved by the Nevada Division of Environmental Protection (NDEP) in 2001. DOE conducts post-closure monitoring of the engineered caps in support of the surface closure.

Subsurface Conditions

Subsurface contamination that resulted from the underground nuclear test is identified as CAU 443. This CAU consists of test-related radionuclides in and around the former test cavity, which is now the lower part of the collapse chimney. The original corrective action strategy for the subsurface used a numerical flow-and-transport model to help evaluate data and select a corrective action alternative. Model results were used to estimate a contaminant boundary, or restricted region,



Cross Section of the Central Nevada Test Area.

surrounding the nuclear detonation. The contaminant boundary is a probabilistic, model-forecasted boundary that represents the maximum extent that groundwater, contaminated with test-related radionuclides exceeding Safe Drinking Water Act standards, is estimated to migrate in 1,000 years. The simulated contaminant boundary and surface effects from the detonation form the basis for establishing the compliance boundary, which has been negotiated with the NDEP boundaries of the down-dropped fault block.

The original corrective action strategy required installation of three wells for the dual purpose of monitoring and validation of the numerical model. Monitoring data and modeling results were compared as part of the validation process. It was concluded that the model could not be validated because it failed to adequately predict water levels in wells drilled subsequent to the modeling effort. This led to a revised corrective action strategy designed to validate the compliance boundary through monitoring and institutional controls, rather than relying predominantly on the numerical flow and transport model. The revised approach included enhancements to the monitoring well network, updates to the site conceptual model, and five years of monitoring to confirm that data were sufficient to proceed to closure. The Closure Report for CAU 443 was approved by NDEP in 2016 and revised in 2018. DOE conducts post-closure monitoring in support of the subsurface closure.

Long-Term Hydrologic Monitoring Program

The U.S. Environmental Protection Agency monitored groundwater quality at and near CNTA annually from 1972 until 2008 as part of its Long-Term Hydrologic Monitoring Program (LTHMP). This program included collecting and analyzing groundwater samples for tritium and gamma-emitting radionuclides. The LTHMP sampling network historically consisted of eight off-site sampling locations

(six wells and two springs) and five on-site sampling locations (five wells). Since the program's inception, analytical results using conventional analytical methods have detected no radionuclides related to the underground nuclear test in any of the samples collected from the off-site locations. In support of these data, DOE developed a more refined monitoring network for the site that focused on monitoring wells within and near the UC-1 withdrawal. These wells were monitored annually from 2009 through 2015, and are now monitored regularly in accordance with the Closure Report for CAU 443.

Land Use

CNTA is on land administered by the U.S. Bureau of Land Management (BLM). DOE established three land withdrawals through Public Land Orders 4338, 4748, and 7891, respectively. Public land surrounding CNTA is used for livestock grazing and ranching, with recreational use during hunting season. No major changes in land use are anticipated. BLM approves all surface land uses that do not interfere with long-term performance and monitoring of the surface-remediated areas. Land associated with the remediated areas is restricted from any use that could alter or modify the buried contaminated soil.

Institutional Controls

CNTA has 11 surface-restricted areas where engineered institutional controls and notices are in place. These controls consist of warning signs, concrete monuments with attached warning signs, enclosures around soil contaminated with diesel fuel, and use restrictions that prohibit intrusive activities.

A notice of restrictions associated with the subsurface is provided on the monument at the UC-1 emplacement borehole, now known as Surface Ground Zero (SGZ). The restrictions on the monument prohibit unauthorized drilling, excavating, and removal of materials for a lateral distance of 3,300 feet from SGZ.

Regulatory Setting

Environmental restoration at CNTA is regulated under the Federal Facility Agreement and Consent Order (FFACO1996, as amended). The FFACO is a three-party compliance agreement between DOE, the state of Nevada, and the U.S. Department of Defense. NDEP has regulatory authority over cleanup operations. As part of FFACO, the DOE Office of Legacy Management (LM) is responsible for maintaining the site in a manner protective of human health and the environment.

Legacy Management Activities

LM conducts long-term monitoring of the CNTA to ensure conditions at the site continue to be protective of human health and the environment. These monitoring activities are conducted in accordance with the surface and subsurface Closure Reports that have been approved for the site. Results obtained from these activities are summarized in monitoring reports for the site.



CONTACT INFORMATION

**IN CASE OF AN EMERGENCY AT THE SITE,
CONTACT 911**

**LM TOLL-FREE EMERGENCY HOTLINE:
(877) 695-5322**

Site-specific documents related to the **Central Nevada Test Area, Nevada, Site**, are available on the LM website at www.energy.gov/lm/central-nevada-test-area-cnta-nevada-site

For more information about LM activities at the **Central Nevada Test Area, Nevada, Site**, contact:

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