

Nevada National Security Site

Background

The Nevada National Security Site (NNSS) — formerly known as the Nevada Test Site — occupies approximately 1,350 square miles in southeastern Nye County, about 65 miles northwest of Las Vegas (Figure 12). The NNSS is larger than Rhode Island and comprises more than 40 percent of all U.S. Department of Energy (DOE) land holdings.⁷⁰ As a DOE defense program site, the primary mission of the NNSS is to help ensure the security of the United States and its allies by supporting the stewardship of the nuclear deterrent, providing emergency response capability, and training and contributing to key nonproliferation and arms control initiatives. The site also has a role in National Nuclear Security Administration nuclear nonproliferation programs, nuclear emergency response capabilities and other federal projects.⁷¹



FIGURE 12: Nevada National Security Site Revegetation Efforts. Photo courtesy of U.S. Department of Energy.

Several regulatory agreements currently guide cleanup and disposal activities at the site. A 1999 Agreement in Principle identified activities that Nevada and DOE would undertake to work cooperatively to assure citizens of Nevada that the public's health and safety as well as the environment are protected. The Agreement in Principle and its later revisions afford Nevada the opportunity to provide input into the evaluation of the waste sent to the NNSS for disposal.⁷² Nevada also engages with DOE EM on the review of low-level waste (LLW) transportation protocols and notifications, emergency planning and response exercises.⁷³

The 1996 Federal Facility Agreement and Consent Order (FFACO) governs remediation of historical contamination and stipulates a process to ensure that DOE and the U.S. Department of Defense thoroughly investigate and complete corrective actions for contaminated sites on the NNSS and the nearby Nevada Test and Training Range. The NNSS also has an Resource Conservation and Recovery Act Part B permit that includes authorization to dispose of mixed LLW generated at the NNSS and other DOE EM sites. The permit, which was modified in 2018 to add a second mixed LLW cell, is effective until December 2020.⁷⁴

⁷⁰ Nevada National Security Site. (n.d.). About the NNSS. Retrieved from <https://www.nnss.gov/pages/about.html>.

⁷¹ Nevada National Security Site. (n.d.). About the NNSS. Retrieved from <https://www.nnss.gov/pages/about.html>.

⁷² Nevada Division of Environmental Protection. (n.d.). Agreement in principle (AIP). Retrieved from <https://ndep.nv.gov/land/departments-of-energy-oversight/agreement-in-principle-aip>.

⁷³ National Nuclear Security Administration. (2016, November). *Nevada National Security Site waste acceptance criteria* (Report No. DOE/NV—325-16-00). Retrieved from https://www.nnss.gov/docs/docs_RWM/NNSSWAC_Nov%202016.pdf.

⁷⁴ Nevada National Security Site. (2018, September). *Environmental report 2017*. Retrieved from http://www.nnss.gov/docs/docs_LibraryPublications/2017%20NNSSER.pdf.

Major Accomplishments

Since the FFACO was signed in 1996, DOE EM has made significant progress in addressing the remediation process in several categories of contaminated sites:

- Industrial site restoration addresses facility deactivation and demolition; historical infrastructure remediation efforts; and conventional weapons cleanup, including unexploded ordnance. The FFACO identified more than 2,000 such sites; to date, all but 12 sites have been clean-closed or closed in place, meeting specific protective closure criteria that enable DOE to close the site with use restrictions.⁷⁵
- At the underground test areas, where underground nuclear tests contaminated groundwater, Nevada approved the closure of one corrective action unit, Frenchman Flat, moving it into long-term monitoring. Nevada and DOE formally established use restrictions, regulatory boundaries and a long-term monitoring strategy. This unit is the first of five to move to the closure stage since the FFACO was signed in 1996. Two other underground test areas are expected to be approved for advancement to the closure stage in the 2020 timeframe.⁷⁶
- Soil sites contain contamination from historical nuclear detonations, safety experiments, nuclear reactor development, nuclear rocket development and hydronuclear experiments. To date, 136 soil sites have either been clean-closed or closed in place with monitoring and use restrictions through a process to which the state and DOE have agreed.⁷⁷ The remaining seven soil sites should be clean-closed or closed in place in 2019.
- The two Nevada off-site areas — Project Shoal and the Central Nevada Test Area (CNTA) — were transferred to the DOE Office of Legacy Management (DOE LM) in 2006. The surface unit at Project Shoal was clean-closed and has no monitoring requirements. Postclosure monitoring is required for the CNTA surface unit. Nevada approved the groundwater unit at the CNTA moving into the closure stage in 2015; therefore, it is currently in long-term monitoring.⁷⁸ Nevada and DOE LM are completing the characterization of the groundwater unit at Project Shoal. It is expected that the groundwater unit will be approved to move into the closure stage in the 2020 timeframe.

Site-Specific Issues

Although the NNSS has a relatively small DOE EM cleanup budget (approximately \$65 million in 2015, or just over 1 percent of all DOE cleanup funds), the site contains significant contamination in surface soils and groundwater. Contamination of groundwater is an area of focus for the state of Nevada at both the NNSS and the Nevada off-site locations; nearly 30 percent of more than 828 underground nuclear tests conducted at the site were performed near groundwater.⁷⁹ Nevada will continue to establish regulatory boundaries for each groundwater unit based on model-generated contaminant boundaries or potential flow paths. If radionuclide levels ever exceed established levels at those boundaries, Nevada will require DOE EM to submit a plan to meet specific groundwater unit objectives.

Nevada has identified the following priorities associated with low-level radioactive waste management at the NNSS and is working with DOE EM and other partners across the complex on these matters:

1. Waste disposal predictability and forecasting.
2. Appropriate waste classification and management based on actual waste characteristics rather than origin.
3. Enhanced waste verification.
4. Ongoing potential incident planning and outreach to local stakeholders.

⁷⁵ Nevada National Security Site. (2018, September). *Environmental report 2017*. Retrieved from http://www.nnss.gov/docs/docs_LibraryPublications/2017%20NNSSER.pdf.

⁷⁶ Nevada National Security Site. (2018, September). *Environmental report 2017*. Retrieved from http://www.nnss.gov/docs/docs_LibraryPublications/2017%20NNSSER.pdf.

⁷⁷ Andres, C. (2018, July 24). Federal Facility Agreement and Consent Order (FFACO) quarterly report [Memorandum]. Retrieved from https://ndep.nv.gov/uploads/land-doe-ffaco-docs/2018_4th_Qtr_FFACO_AIP.pdf.

⁷⁸ Andres, C. (2018, July 24). Federal Facility Agreement and Consent Order (FFACO) quarterly report [Memorandum]. Retrieved from https://ndep.nv.gov/uploads/land-doe-ffaco-docs/2018_4th_Qtr_FFACO_AIP.pdf.

⁷⁹ Nevada National Security Site. (n.d.). Groundwater characterization. Retrieved from <https://www.nnss.gov/pages/programs/em/GroundwaterCharacterization.html>.

Relationship to Other Sites in the Complex

The NNSS is currently the only DOE-owned disposal site DOE has identified for off-site disposal of DOE-generated low-level, mixed low-level and classified waste. DOE designated the NNSS and Hanford as the two regional disposal sites for off-site LLW and mixed LLW from throughout the complex in 2000; however, a moratorium is in place on most new waste shipments to Hanford until the Waste Treatment Plant is in full operation.⁸⁰ NNSS receipt of waste is conducted in accordance with the facility waste acceptance criteria and a waste profile review process that includes state review.

Nevada and DOE have agreed to engage in discussions on any potential future changes to the NNSS Waste Acceptance Criteria or LLW classification in general.⁸¹

The NNSS will continue to generate LLW into the future. DOE will manage and dispose of the vast majority of waste on-site, with the exception of a small quantity of transuranic waste generated and currently stored at the site that will ultimately be shipped to the Waste Isolation Pilot Plant in New Mexico.

⁸⁰ U.S. Department of Energy. (n.d.). *Hanford annual site environmental report for calendar year 2017*. Retrieved from https://msa.hanford.gov/files.cfm/DOE-RL-2018-32_Rev0_UP-DATED.pdf.

⁸¹ National Nuclear Security Administration. (2016, November). *Nevada National Security Site waste acceptance criteria* (Report No. DOE/NV—325-16-00). Retrieved from https://www.nnss.gov/docs/docs_RWM/NNSSWAC_Nov%202016.pdf.