Addressing Soil Contamination

safety ❖ performance ❖ cleanup ❖ closure

From Testing to Cleanup

From 1951 through 1992, the Nevada National Security Site (NNSS) and surrounding federal land served as official nuclear testing grounds for the U.S. Departments of Energy (DOE) and Defense. In 1989, the DOE's National Nuclear Security Administration Nevada Site Office began formally addressing the environmental impacts of testing-related contamination at specific locations on the NNSS and the adjacent Nevada Test and Training Range. A major part of this effort involves exploring surface contamination resulting from historic atmospheric tests.

The Nevada Field Office's Environmental Management team developed a plan to characterize, manage and, where necessary, clean up surface and shallow subsurface soil and debris at these former test locations. Contaminants range from radioactive material to oil, solvents, and heavy metals such as lead. Surface debris often consists of contaminated instruments and test structures used during testing activities.

(Right) Nevada Field Office cleanup expert conducts surface soil sampling at historic atmospheric nuclear test location, Johnnie Boy. (Bottom) Personnel take radiological measurements of surface rubble near crater at historic Smoky test location.

Characterization to Remediation

Cleanup experts use a systematic approach for determining a path forward at each site. Field crews begin by conducting on-site **characterizations**, which typically include radiological surveys and a rigorous soil sampling campaign. Data collected at this stage helps experts identify the nature and extent of contamination as well as the potential risk to human health and the environment. This information is then used to formulate a cleanup, or **remediation**, strategy for each location. This remediation approach (required under the ***Federal Facility Agreement and Consent Order***) weighs the risks/benefits of removing and disposing contaminated media as opposed to **closing** a site **in place** with use restrictions.

Definitions

Characterization: The process of identifying the type, amount, and location of contamination.

Close in Place: Occurs when contaminants of concern (i.e. radioactive materials or hazardous constituents) are left in place at the site. This method is used when the act of disturbing or removing contamination presents risks to workers (and/or associated costs) that outweigh the benefits of removal. Access to these sites is controlled via land-use restrictions and physical barriers, such as fencing.

Closure/Closed: A formal process involving the remediation of a site where the implementation of use restrictions and long-term institutional controls are necessary.

Federal Facility Agreement and Consent Order: An agreement with the State of Nevada which outlines a schedule of cleanup and monitoring commitments for sites contaminated by historic nuclear testing activities conducted in Nevada by the U.S. Department of Energy and the U.S. Department of Defense.

Remediation: The process of cleaning, removing and/or isolating materials contaminated by historic nuclear testing activities.

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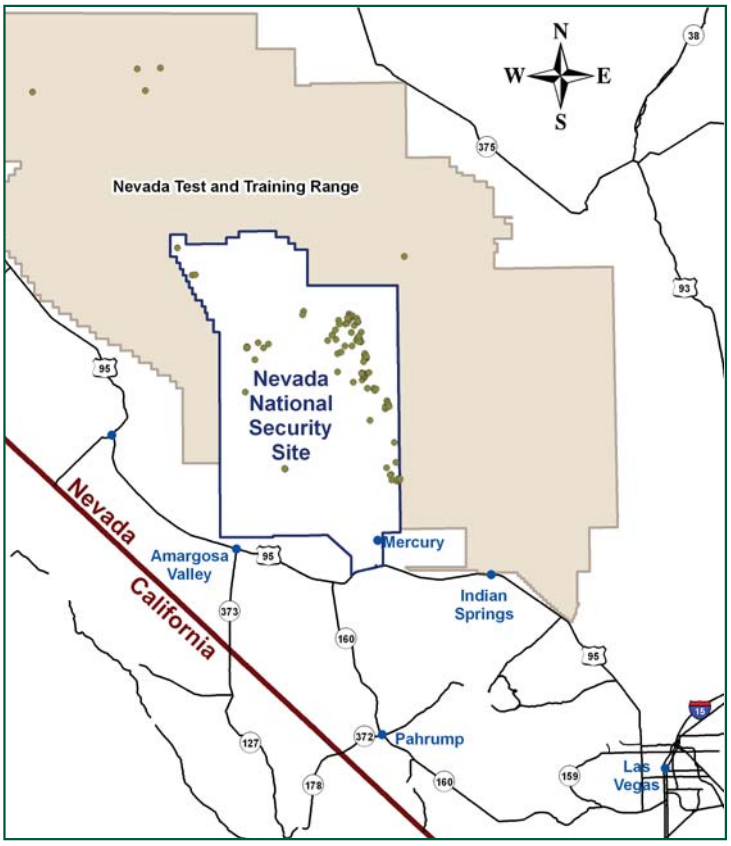
Current Efforts

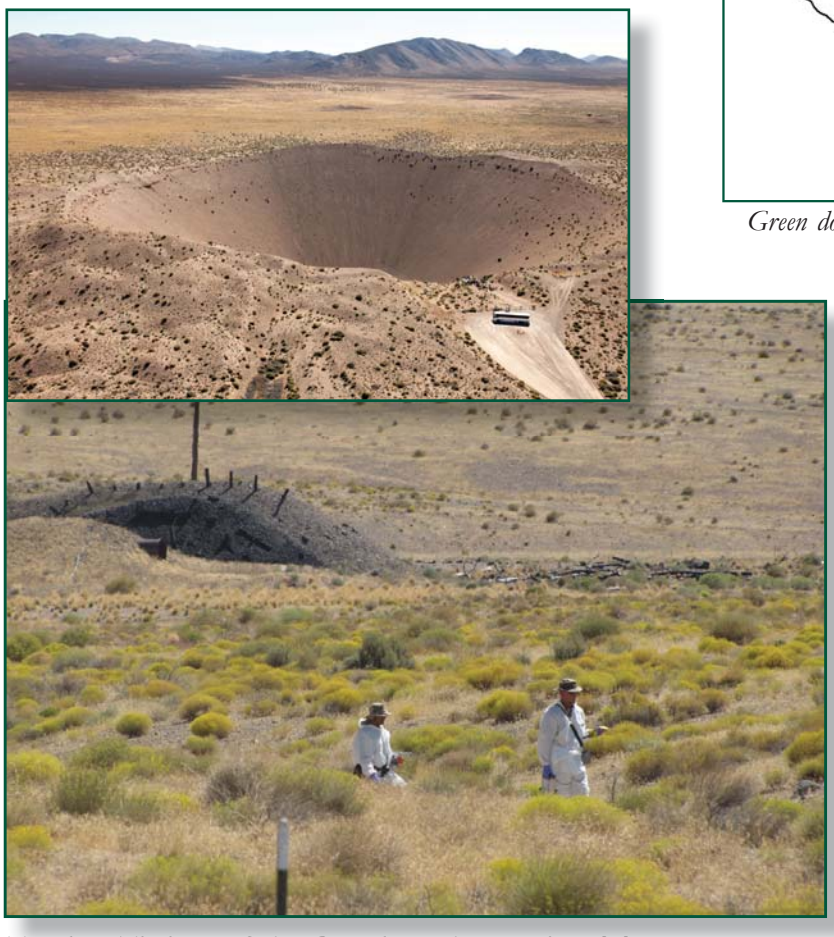
Of the approximately 130 sites requiring remediation at the NNSS, nearly 30 percent have undergone a formal **closure** process. Recent closures at several key former NNSS test locations, like the historic *Sedan Crater*, represent a significant accomplishment for the Nevada Field Office as well as the DOE Complex as a whole, which is striving for cleanup on a national scale.

Over the long-term, the Nevada Field Office will continue to manage all **closed** NNSS sites with appropriate restrictions and long-term monitoring. Remediation activities at the remaining sites are expected to be completed by 2014.

Related fact sheets can be found online at the Nevada Site Office's Environmental Programs Page: nnss.gov/pages/programs/em/Environmental.html



Green dots represent cleanup sites on the Nevada National Security Site and Nevada Test and Training Range.



Top photo: The historic Sedan Crater has undergone a formal closure process. Bottom photo: Radiation technicians survey the Smoky site as part of characterization activities.

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For information on all Nevada Field Office Environmental Management activities visit: nnss.gov/pages/programs/em/Environmental.html

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