# Nevada National Security Site

## Overview

The NNSS was used from 1951 to 1992 to conduct a total of 100 atmospheric and 828 underground nuclear weapons tests. As a result, some groundwater, surface soils, and industrial facilities were contaminated on the NNSS and the surrounding Nevada Test and Training Range. The DOE's EM Nevada Program is responsible for completing cleanup actions at these historic nuclear testing locations, as well as waste disposal for both on-site and off-site generators.

In accordance with the Federal Facility Agreement and Consent Order (FFACO), the EM Nevada Program is responsible for environmental corrective actions at 148 surface soil locations, 1,013 industrial locations, and groundwater contaminated by historical nuclear testing. Cleanup has been completed at all surface soil sites covered in the FFACO, an accomplishment reached six years ahead of schedule, with cost savings of approximately $67 million in federal funding. Cleanup has also been completed at 99 percent of all industrial sites, with only two legacy industrial facilities remaining to be addressed.

Concerning groundwater contamination, the EM Nevada Program is working to identify contaminant boundaries, restrict access to contaminated groundwater, and implement a long-term monitoring program. Because of the vast and complex geology of the NNSS, groundwater contamination is grouped into characterization areas based on location and similar geology. Three of the four groundwater characterization areas the EM Nevada Program manages have now transitioned into long-term monitoring. Notably, the Rainier Mesa/Shoshone Mountain groundwater area was closed in 2020, three years ahead of schedule, with savings of approximately $5 million in federal funding.

The EM Nevada Program welcomes stakeholder feedback through a variety of means, including regular meetings with intergovernmental stakeholders and the Nevada Site Specific Advisory Board (NSSAB). The NSSAB reviewed and provided input on EM Nevada's


Sunset view of a drill site for a groundwater characterization well on Pahute Mesa.

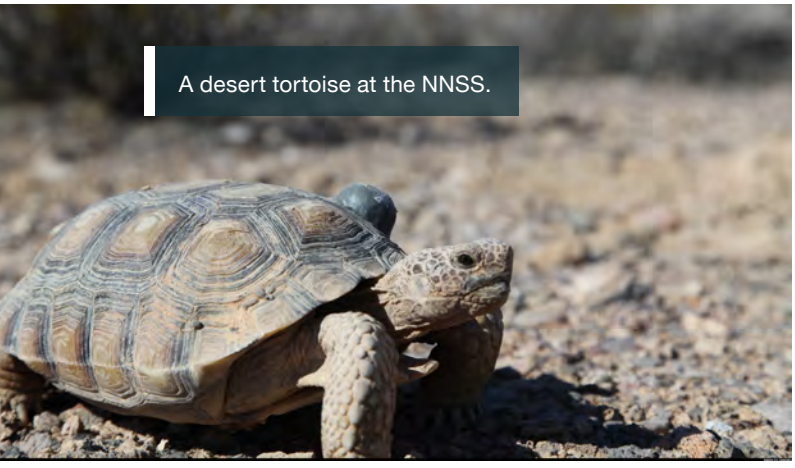
2021 Strategic Vision, in addition to incorporating items from the Program's planned cleanup scope and end state into the Board's self-identified Work Plan for FY 2021.

## Calendar Year 2020 Accomplishments

- **Met an EM priority to complete the transfer of long-term stewardship responsibilities for 70 closed sites on and around the Tonopah Test Range to LM — ahead of schedule and under budget**
- **Closed the Rainier Mesa/Shoshone Mountain groundwater area three years ahead of schedule, with approximately $5 million in savings**
- **Closed the Yucca Flat/ Climax Mine groundwater area, bringing 75 percent of all NNSS groundwater areas to end-state completion**
- **Safely and securely disposed of approximately 500,000 cubic feet of classified and LLW/MLLW in support of DOE sites involved with nuclear research, development, and testing, and ongoing national security and science missions**

## Planned Cleanup Scope 2021–2031

Over the coming decade, EM expects to complete its current scope of cleanup activities at the NNSS. EM Nevada will continue to closely collaborate with local stakeholders, including state and local officials, the NSSAB, Intergovernmental Liaisons group, Low-Level Waste Stakeholders Forum, and others, to complete its cleanup mission in a manner that prioritizes the protection of the public, communities, and the environment.



A desert tortoise at the NNSS.

### GROUNDWATER/SOIL REMEDIATION

The EM Nevada Program is working to accelerate the closure of the remaining groundwater areas by approximately two years, which would result in approximately $80 million in anticipated savings.

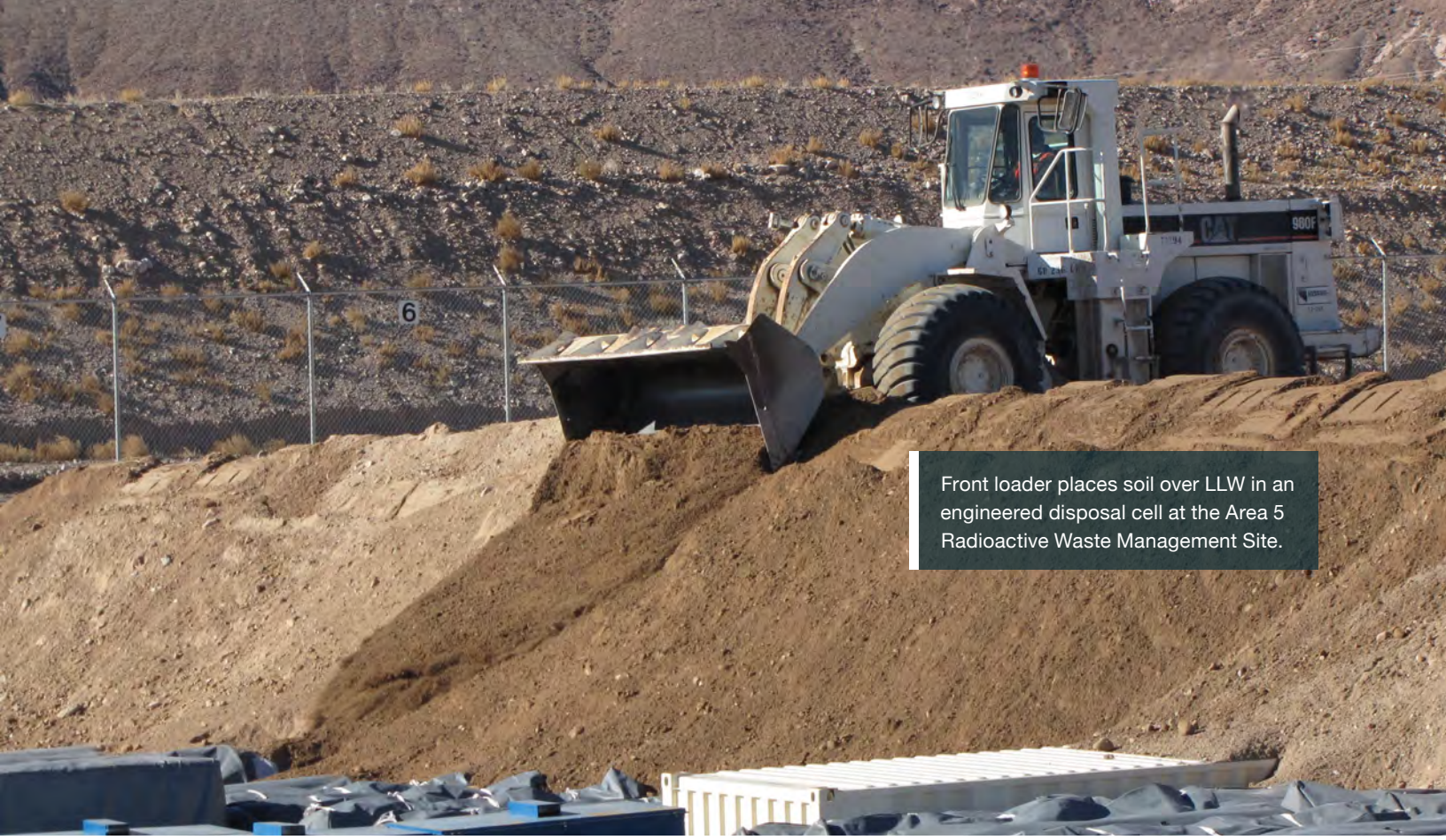
At the Pahute Mesa groundwater characterization area, the corrective action investigation phase (including completion of the flow and transport model, external peer review, and regulatory approval of the corrective action plan) is anticipated to be completed by the end of 2023. By the end of 2027, EM anticipates completing the model evaluation phase for the Pahute Mesa, including the drilling of four model evaluation wells, data analysis, flow and transport model adjustments, and regulatory approval to move to the final phase. By the end of 2028, EM anticipates transitioning the Pahute Mesa area into the long-term monitoring phase. This action will complete groundwater corrective action activities and long-term monitoring will be transferred to the landlord of the NNSS, the NNSA.

Long-term monitoring of the soil corrective action sites on the NNSS will remain the responsibility of the EM Nevada Program until all FFACO-required environmental corrective actions on the NNSS are completed in or around 2028. At that time, any sites requiring future post-closure monitoring and use restrictions per the FFACO will be managed by NNSA.

### INDUSTRIAL FACILITIES

The two remaining industrial facilities are the Engine Maintenance Assembly and Disassembly (EMAD) facility and Test Cell C (TCC) Ancillary Buildings and Structures, which consist of eight sites required to be addressed under the FFACO. By the end of 2022, the EM Nevada Program hopes to receive regulatory approval on the corrective action strategy for the EMAD and TCC sites. In 2023, the EM Nevada Program plans to demolish the TCC buildings to grade, dispose of the generated waste, and close in place any contamination located below grade. In 2025, the EM Nevada Program plans to complete similar demolition and waste disposal activities for the EMAD.

Long-term monitoring of NNSS industrial sites will remain the responsibility of the EM Nevada Program until all FFACO-required environmental corrective actions are completed in, or around, 2028. At that time,



Front loader places soil over LLW in an engineered disposal cell at the Area 5 Radioactive Waste Management Site.

any sites requiring future post-closure monitoring and use restrictions per the FFACO will be managed by NNSA.

## WASTE DISPOSAL ACTIVITIES

The EM Nevada Program will continue to support cleanup activities across the DOE complex by providing disposal capacity and services for up to 1.2 million cubic feet annually of LLW, MLLW, and classified waste through 2030. In 2021, the EM Nevada Program will aid in the completion of the Area 5 Radioactive Waste Management Facility infrastructure improvements, including the addition of new power lines as well as a drainage berm and channel.

### Key Regulatory Milestones 2021–2031

EM Nevada activities are primarily regulated by the FFACO. A supplemental Agreement in Principle between the Department and the state exists to provide a role for the Nevada Division of Environmental Protection in oversight of NNSS LLW disposal operations.

- **Submit the TCC closure report to the regulator — April 28, 2023**
- **Submit the EMAD facility closure report to the regulator — September 30, 2024**
- **Transition post-closure monitoring for most sites to NNSA — September 30, 2027**
- **Transition post-closure monitoring of Pahute Mesa to NNSA — September 30, 2028**

### Post-2031 Cleanup Scope

The EM Nevada Program is scheduled to reach end state for its cleanup mission no later than 2030, which will ultimately involve the completion of all active remediation activities and the conveyance of remediated sites to NNSA for long-term stewardship. It is currently anticipated that there will be a need within the DOE complex for NNSS waste disposal beyond 2030.