



Sandia
National
Laboratories

ANNUAL SITE
ENVIRONMENTAL
SUMMARY REPORT

2023

TONOPAH

NEVADA

Yellow-flowered prickly pear
(*Opuntia* sp.) by Jim Galli



DOE/NNSA and Sandia are committed to ***safeguarding the environment, assessing sustainability practices, and ensuring the validity and accuracy of the monitoring data*** presented in this summary of the 2023 SNL/TTR annual site environmental report.

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This report summarizes the environmental protection and monitoring programs in place at Sandia National Laboratories, Tonopah Test Range (SNL/TTR) during calendar year 2023. While most 2023 program activities were performed continuously, they are reported on a calendar-year basis unless otherwise noted. Programs based on the fiscal year operate from October 1 through September 30, annually.

Detailed information on these programs can be found in the full annual site environmental report, accessed via the QR code.





Tonopah Test Range

ENVIRONMENTAL MANAGEMENT SYSTEM

The Environmental Management System is Sandia's primary platform for implementing the environmental management programs that help achieve annual site sustainability goals. A robust environmental management system ensures a structured approach to identifying environmental aspects, setting environmental objectives, and monitoring environmental performance. Sandia's Environmental Management System is ISO 14001:2015 certified at the New Mexico and California sites. SNL/TTR personnel follow the system's requirements, as verified by an internal assessment in 2020.

For fiscal year 2023, hazardous materials, hazardous waste, radiological waste, release of explosives and combustion byproducts, and release of radionuclides were identified as significant aspects for operations at SNL/TTR.

Sandia has established environmental programs at SNL/TTR (listed in the following pages) that are instrumental in the implementation, maintenance, and continual improvement of the Environmental Management System at this site.





Tonopah Test Range antenna

Sandia defines sustainability practices and goals in a site sustainability plan. The annual site sustainability plan provides a roll-up of sustainability data from all primary Sandia sites including SNL/TTR.

Highlights for SNL/NM in 2023 include

(1) decreasing greenhouse gas emissions relative to fiscal year 2008, (2) updating resiliency solutions in the vulnerability assessment and resilience plan, and (3) exceeding the goal for consumption of clean and renewable electric energy. Personnel added sustainable acquisition reporting requirements into the request for information and request for quote processes. Additionally, personnel created new rules in the Oracle software system to add the updated 350APR “green language” clause for sustainable acquisition and affirmative procurement into applicable contract categories to promote sustainable acquisition.

In contrast, fiscal year 2023 energy intensity increased by 19.7 percent relative to the fiscal year 2015 baseline at SNL/TTR and potable water intensity increased by 19.6 percent relative to the fiscal year 2021 baseline.

SITE SUSTAINABILITY





Western fence lizard (*Sceloporus occidentalis*)

Occurrences are defined as “events or conditions that adversely affect, or may adversely affect, DOE (including the National Nuclear Security Administration) or contractor personnel, the public, property, the environment, or the DOE mission.”

ENVIRONMENTAL PERFORMANCE

DOE/NNSA personnel assess environmental performance through data measures and indicators and then report on this as part of an annual performance evaluation. The performance evaluation is the DOE/NNSA report card that ascribes a rating for five key performance goals and an overall rating. During the most recent evaluation, Sandia earned a rating of very good for the Mission Enablement performance goal, which includes the objective of delivering effective, efficient, and responsive Environment, Safety, and Health quality. By exceeding almost all the objectives and key outcomes under the performance goals, Sandia received an overall rating of excellent for fiscal year 2023.

For the annual site environmental report, the Occurrence Reporting and Processing System database was queried for occurrences related to environmental programs and compliance. During 2023, no occurrences met the criteria for reporting in the annual site environmental report.

Additionally, all environmental monitoring was conducted in accordance with program-specific plans that contain applicable quality assurance elements and meet appropriate federal, state, and local requirements for conducting sampling and analysis activities.





Globemallow (*Sphaeralcea sp.*)

AIR QUALITY COMPLIANCE PROGRAM

Air Quality Compliance Program personnel ensure that operations comply with federal and state air quality regulations promulgated in accordance with the Clean Air Act and the Clean Air Act Amendments of 1990. Program personnel also confirm that operations are compliant with the SNL/TTR Class II Air Quality Operating Permit issued by the State of Nevada. In Nye County, the Nevada Department of Environmental Protection implements air quality regulations and standards established by the Environmental Protection Agency and the State of Nevada.

2023 Program activities and results:

The Sandia Field Office has an air quality permit at SNL/TTR, and emissions from permitted sources complied with permitted limits in 2023. During 2023, permitted sources emitted 0.005 tons of hazardous air pollutants, 0.19 tons of volatile organic compounds, 1.06 tons of carbon monoxide, 2.02 tons of nitrogen oxides, 0.12 tons of particulate matter with a diameter $\leq 10 \mu\text{m}$, and 0.0018 tons of sulfur dioxide. The permitted sources include a portable soil sorting system, facility maintenance shops, and generators.





Cactus Peak

CHEMICAL INFORMATION SYSTEM

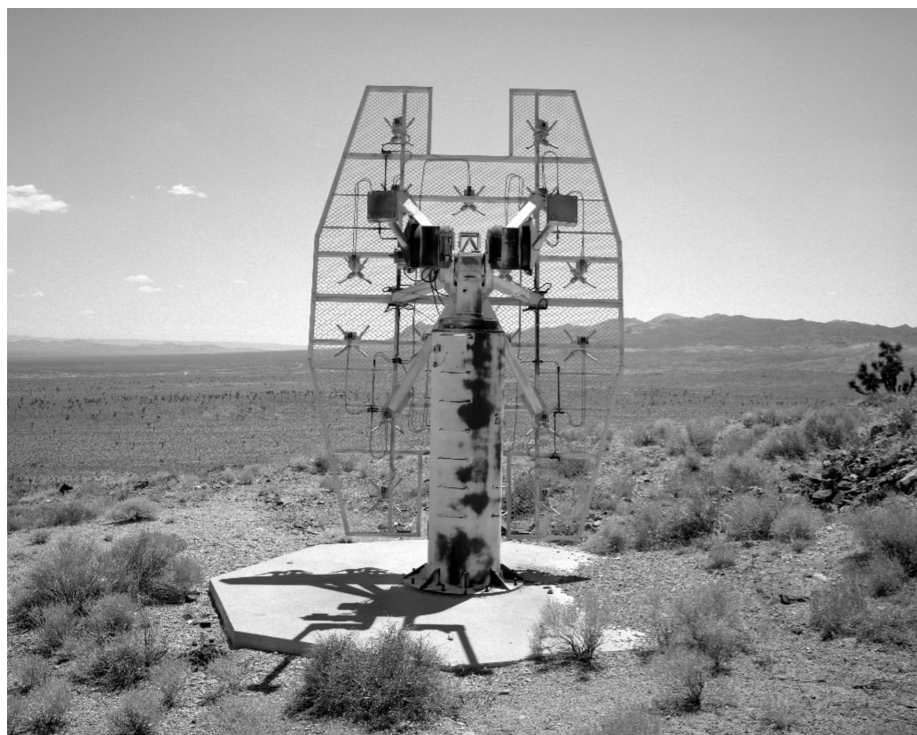
The Chemical Information System for all Sandia locations is a comprehensive chemical information tool used to track workplace chemical and biological containers by location. The primary drivers for the Chemical Information System are state and federal regulations, including the Emergency Planning and Community Right-to-Know Act.

The information system provides the chemical or product name, its location and quantity, and information about who is responsible for the chemical. Chemical hazards are reported on safety data sheets, and the Chemical Information System currently contains more than 129,000 safety data sheets in its library for use by any Sandia site. This electronic inventory helps chemical users and managers assess and manage workplace hazards. Easy access to this inventory facilitates availability searches. It also improves the ability to share chemicals, reducing sources, which minimizes chemical purchases and waste disposal expenses.

2023 Program activities and results:

In 2023, personnel tracked chemical containers at SNL/TTR, including information about any related chemical hazards.





Structure 24-03, an obsolete antenna
(Photo taken on August 11, 2004,
by Joseph M. Bonaguidi)

CULTURAL RESOURCES PROGRAM

Cultural Resources Program personnel focus primarily on long term preservation and protection of cultural resources and cultural resource compliance to maintain the heritage of Sandia operating areas and their landscapes. Long-term preservation and protection also ensure that data are available to make proper land use decisions and to assist with environmental planning. Cultural Resources Program personnel focus on two main cultural resource categories: archaeological resources and historic buildings.

2023 Program activities and results:

Archaeological staff reviewed nine outdoor projects at SNL/TTR in 2023. No immediate archaeological concerns were found for any of the reviewed projects.

In 2022, DOE/NNSA and Sandia hosted representatives of the Nevada State Historic Preservation Division at SNL/TTR to review and discuss archaeological and historic building questions regarding a programmatic agreement. Additional discussions between DOE/NNSA and the Nevada State Historic Preservation Office in 2023 led to the decision to conduct a new historic buildings survey and assessment in 2024.

In 2022, DOE/NNSA and the Nevada State Historic Preservation Officer also completed a memorandum of agreement outlining mitigative actions for the demolition of Tower 02-00, which was part of the SNL/TTR historic district. All actions required prior to the tower's demolition were completed in 2022, and the tower was demolished in 2023. A final report on the tower's history, with architectural descriptions and photographs, is expected in 2024.





Mountain lion (*Puma concolor*)


ECOLOGY PROGRAM

Ecology Program personnel conduct project assessments to ensure compliance with wildlife regulations and laws and to support land use decisions. Ecological and wildlife awareness campaigns are conducted to ensure safe work environments and sustainable decision-making strategies.

2023 Program activities and results:

Personnel conducted avian surveys in June 2023 in accordance with the new avian survey protocol that was developed in 2022 to better align with the North American Breeding Bird Survey. Two hundred and eighty-five birds from 15 species were recorded along the newly established survey routes. Horned larks (*Eremophila alpestris*) were the most recorded species during surveys. The second-most encountered species was the black throated sparrow (*Amphispiza bilineata*). In 2023, there was also an increase in Migratory Bird Treaty Act protected nests detected and reported at SNL/ TTR. Thirteen nests were reported to Ecology Program personnel during April and May for further evaluation and appropriate compliance actions. Most of the reported nests belonged to common ravens (*Corvus corax*).





ENVIRONMENTAL RESTORATION OPERATIONS

Sunset in Tonopah, Nevada

Environmental restoration activities were initiated at SNL/TTR and the Nevada Test and Training Range in 1980 to address contamination resulting primarily from nuclear weapons testing and related support activities. There are 70 corrective action sites at SNL/TTR. A listing of corrective action units and sites is available in the Federal Facility Agreement and Consent Order. Active remediation is complete for all corrective action sites at SNL/TTR.

2023 Program activities and results:

There were no environmental restoration activities at SNL/TTR during 2023, as these facilities are now managed by the DOE Office of Legacy Management. In future years, any updates on corrective action sites at SNL/TTR would be reported in the DOE Office of Legacy Management annual site environmental report, which can be found on their website.



Great Basin fritillary (*Speyeria egleis*)

NATIONAL ENVIRONMENTAL POLICY ACT PROGRAM

National Environmental Policy Act (NEPA) program personnel provide technical assistance to ensure that Sandia operations and activities are reviewed for NEPA compliance at all Sandia sites. For all proposed projects and activities, project owners must complete a NEPA checklist using the online NEPA module application. After reviewing a NEPA checklist, NEPA program personnel determine whether proposed projects and activities have been evaluated in existing NEPA documentation. The checklist is forwarded to the Sandia Field Office if the proposal is not covered by existing NEPA documentation. In addition, other relevant environmental program subject matter experts review NEPA checklists to identify any applicable environmental permitting and other requirements.

2023 Program activities and results:

In 2023, NEPA program personnel reviewed 12 proposed projects and submitted two Request for Environmental Analysis forms (AF Form 813) on behalf of the Sandia Field Office. Additionally, NEPA program personnel were invited with range leadership, Sandia Field Office, and Nevada National Security Site personnel to comment on the draft supplement analysis of DOE/EIS-0426, *Site-Wide Environmental Impact Statement for the Continued Operation of the Department of Energy/National Nuclear Security Administration Nevada National Security Sites and Off-Site Locations in the State of Nevada*. Sandia personnel also provided additional descriptions and analysis of future operations and infrastructure changes expected at SNL/TTR.





Joshua tree (*Yucca brevifolia*)

Oil Storage Program personnel support the management, operation, and maintenance of oil storage containers and equipment at SNL/TTR to prevent spills or releases of oil that could potentially damage water resources, impact soil, or otherwise adversely affect the environment.

Personnel determined in 2019 that SNL/TTR oil storage facilities are not subject to regulation under 40 CFR 112, *Oil Pollution Prevention*, because the location of all the oil storage containers and equipment is within a hydrologically closed basin with no potential to impact waters of the United States. However, as a best management practice, Sandia personnel continue to inspect oil storage containers and equipment monthly to ensure functional operating conditions and to monitor for potential spills or releases to the environment.

2023 Program activities and results:

There were no reportable oil releases in 2023.

OIL STORAGE PROGRAM





Wild horse (*Equus ferus*)

TERRESTRIAL SURVEILLANCE PROGRAM

Terrestrial Surveillance Program personnel collect environmental media (soil) samples annually, which are analyzed for radiological constituents, as required. As a best management practice, personnel also collect samples to analyze metals. Terrestrial surveillance began at SNL/TTR in 1992.

In addition to the environmental media samples collected, personnel measure ambient external gamma radiation levels using environmental dosimeters. They conduct these surveillance activities at designated off- and on-site locations and around the perimeter of SNL/TTR. Dosimeters are exchanged quarterly.

2023 Program activities and results:

Analyses of 2023 results for the radionuclides revealed instances of statistical significance (population differences with increasing trends) for actinium-228 at two on site locations: S-03 and S-47. There are no reference values to compare radionuclides values in soil. The results are within the historical range for the data set at SNL/TTR. Analysis results for metals revealed one instance of statistical significance for beryllium at on-site location S-10. The result is below the EPA regional screening level for residential use and is within Nevada soil concentrations for beryllium.

Personnel used environmental dosimeters to measure the dose from ambient gamma radiation. The average annual dose rates are higher than the established non-urban Nevada value of 71 mrem/year. The difference may be attributed to a variety of elevations, proximity to bedrock, and the spontaneous nature of radioactivity.





Historic artifacts at Tonopah Test Range

WASTE MANAGEMENT PROGRAM

Navarro Research and Engineering personnel manage all waste generated at SNL/TTR—which excludes any waste generated by environmental restoration activities—under the Waste Management Program. Waste categories include radioactive waste, Resource Conservation and Recovery Act hazardous waste, other chemical waste, and nonhazardous solid waste. Waste minimization and recycling efforts are integrated into Waste Management Program activities.

2023 Program activities and results:

In 2023, the following types and amounts of waste were generated at SNL/TTR:

- Asbestos waste (154 kg)
- Hazardous waste regulated by the Resource Conservation and Recovery Act (74 kg)
- Recycled materials (84,624 kg)
- Regulated waste not controlled by the Resource Conservation and Recovery Act (1,632 kg)

Site personnel shipped hazardous waste and other regulated waste off-site to permitted facilities. Waste shipped in 2023 included 2,536 kg of construction debris sent to the U.S. Air Force Construction Landfill and 12,664 kg of sanitary landfill waste sent to the U.S. Air Force Sanitary Landfill.

Recyclables and used oil are sent for recycling or are disposed of through a waste disposal contractor. In total, 84,624 kg of material was recycled or energy-recovered and shipped off-site in 2023. There were no radioactive waste shipments in 2023.





Pronghorn (*Antilocapra americana*)

WATER QUALITY PROGRAM

The Water Quality Program includes drinking water, release reporting, septic tank systems, stormwater, wastewater, and water conservation. The current SNL/TTR water conservation plan was revised in November 2020 and was approved by the State of Nevada Department of Conservation and Natural Resources, Division of Water Resources on February 17, 2021. The SNL/TTR water conservation plan provides education, conservation measures, and supply management guidance. The next plan revision is due by February 17, 2026.

2023 Program activities and results:

In 2023, no releases to the environment occurred that required reporting to the Nevada Department of Environmental Protection or any outside agency.

Site personnel routinely sample the public water system. There were no exceedances of water quality standards in 2023. Four arsenic compliance samples were collected from the Area 3 distribution system for analysis in 2023. The maximum contaminant level for arsenic in drinking water is 10 parts per billion (ppb) as a running annual average. The running annual average for arsenic in the drinking water at SNL/TTR during the fourth quarter of 2023 was 3.6 ppb. There were four precautionary boil water notices issued for the SNL/TTR public water system in 2023.





Bighorn sheep (*Ovis canadensis*)

Throughout 2023, Water Quality Program personnel worked with engineers on various public water system projects, including projects to replace the Well 6 piping and casing, upgrade the Water Treatment Facility's carbon dioxide injection system, install a temporary fire protection system for use during the upcoming water tower maintenance project, and support the water tower maintenance project that includes repairing and painting the interior of the water tower and repainting and installing new equipment.

As a best management practice, Sandia personnel sample Area 3 wastewater annually at the point where wastewater leaves SNL/TTR property and enters the U.S. Air Force system. Personnel collect 24-hour composite wastewater samples annually. There were no excursions or violations of concentration limits in 2023.

WATER QUALITY PROGRAM
(CONTINUED)





Sandia National Laboratories



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