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SANDIA NATIONAL LABORATORIES

2024

ANNUAL SITE ENVIRONMENTAL REPORT

KAUA'I
HAWAI'I

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United States Department of Energy, National Nuclear Security Administration,
Sandia Field Office, Albuquerque, New Mexico

2024 Annual Site Environmental Report
for Sandia National Laboratories, Kauaʻi Test Facility, Hawaiʻi

Prepared by
Sandia National Laboratories
P.O. Box 5800
Albuquerque, New Mexico 87185-1512

for
U.S. Department of Energy
National Nuclear Security Administration
Sandia Field Office

Abstract
Sandia National Laboratories is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy's National Nuclear Security Administration. The National Nuclear Security Administration's Sandia Field Office administers the contract and oversees contractor operations at the Sandia National Laboratories Kauaʻi Test Facility in Hawaiʻi. Activities at the site are conducted in support of U.S. Department of Energy weapons programs, and the site has operated as a rocket preparation launching and tracking facility since 1962.

The U.S. Department of Energy and its management and operating contractor are committed to fulfilling regulatory obligations, safeguarding the environment, assessing sustainability practices, and ensuring the validity and accuracy of the monitoring data presented in this annual site environmental report. This report summarizes the environmental protection, restoration, and monitoring programs in place at Sandia National Laboratories, Kauaʻi Test Facility, during calendar year 2024. Environmental topics include cultural resource management, chemical management, air quality, meteorology, ecology, oil storage, site sustainability, terrestrial surveillance, waste management, water quality, wastewater discharge, and implementation of the National Environmental Policy Act. This report is prepared in accordance with and as required by DOE O 231.1B, Admin Change 1, *Environment, Safety and Health Reporting*, and has been approved for public distribution.

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The following individuals provided their time and expertise to support production of this annual report for Sandia National Laboratories, Kauaʻi Test Facility, Hawaiʻi:

Sandia National Laboratories ASER Project Lead/Technical Reviewer
Amy Miller

Department of Energy Project Lead/Technical Reviewer
Janet Forestier

Document Production and Technical Editing
Shirley Coe, Coleen Maddy, Brittany Means, Casey Pirtle, Nancy White

Contributing Authors

Jacob Alexander
Penny Avery
Matt Baumann
Kelly Bowles
Benito Casaus
Christina Chavez
Ashlee Edmonson
Evan Fahy
Danny Ferraro
Joe Fontana
Morgan Gerard
Erin Greenlee
Stacy Griffith
Christopher Hall
Casey Hendricks
Benjamin Henning
Mark Howard
John Kay
Andrez Leyva
Amy Miller
Wendy Palencia
Sam Poli
Anita Reiser
Tomas Sanchez
John Sandlin
Che Shu-Nyamboli
Lucy Tyler
Rebecca Ullrich
Doug Vetter
Mark Zuverink

Note to the Reader

This annual site environmental report for Sandia National Laboratories, Kauaʻi Test Facility, Hawaiʻi, presents summary data regarding environmental performance and compliance with environmental standards and requirements. In addition, the U.S. Department of Energy views this document as a valuable tool for maintaining a dialogue with the community about the environmental health of this site and as a commitment to protect our nation's valuable resources. With the goal of continually improving the quality of this annual report and including information that is important to you, you are invited to provide feedback, comments, or questions to:

U.S. Department of Energy, National Nuclear Security Administration, Sandia Field Office
P.O. Box 5400
Albuquerque, NM 87185-5400
Attention: Tami Moore

This Sandia National Laboratories, Kauaʻi Test Facility, Hawaiʻi, annual site environmental report can be found at the following website:
https://www.sandia.gov/news/publications/environmental-reports/

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Acronyms and Abbreviations

Term	Definition
A	
AD	anno Domini
ASER	annual site environmental report
D	
DoD	United States Department of Defense
DOE	United States Department of Energy
DOECAP	DOE Consolidated Audit Program
E	
EISA	Energy Independence and Security Act
EPA	United States Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ES&H	Environment, Safety, and Health
I	
ISO	International Organization for Standardization
N	
NEPA	National Environmental Policy Act
NNSA	National Nuclear Security Administration
P	
PCB	polychlorinated biphenyl
R	
RCRA	Resource Conservation and Recovery Act
S	
Sandia	Sandia National Laboratories
SNL/KTF	Sandia National Laboratories, Kaua'i Test Facility, Hawai'i
SNL/NM	Sandia National Laboratories, New Mexico
spp.	unknown species, plural
T	
TSDF	Treatment, storage, and disposal facility
U	
U.S.	United States
USFWS	United States Fish and Wildlife Service

Units of Measure

Unit	Definition
°F	degrees Fahrenheit
kg	kilogram
mph	miles per hour

Executive Summary

Kaua'i Test Facility

Sandia National Laboratories (hereinafter referred to as Sandia) is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy's National Nuclear Security Administration (DOE/NNSA). This annual site environmental report (ASER) was prepared in accordance with and as required by DOE O 231.1B, Admin Change 1, *Environment, Safety and Health Reporting*, and is approved for public release. DOE/NNSA and its management and operating contractor for Sandia are committed to fulfilling regulatory obligations, safeguarding the environment, continually assessing sustainability practices, and ensuring the validity and accuracy of the monitoring data presented here. This report summarizes the environmental protection, restoration, and monitoring programs in place for Sandia National Laboratories, Kaua'i Test Facility (SNL/KTF) during calendar year 2024.

Environmental Management System

Sandia management takes environmental stewardship seriously. A robust Environmental Management System was established in 2005 as part of this commitment.
The Environmental Management System is Sandia's primary platform for implementing the environmental management programs that help achieve annual site sustainability goals. This system ensures a systematic approach to identifying environmental aspects, setting environmental objectives, and monitoring environmental performance. Designed to meet the requirements of the globally recognized International Organization for Standardization (ISO) 14001:2015 standard, the Environmental Management System is ISO 14001:2015-certified at Sandia National Laboratories, New Mexico, and Sandia National Laboratories, California. While operations at SNL/KTF are required to comply with the Environmental

Management System requirements, operations have not been included in the ISO 14001:2015 certification due to the limited scale of operations there.

In fiscal year 2024, the Environmental Management System carried forward the significant aspects established by the environmental aspects and impacts analysis performed in fiscal year 2023. An environmental aspects and impacts analysis is a process used to identify environmental aspects of Sandia activities and to score the associated environmental impacts. When significant aspects and negative impacts have been identified, environmental objectives—at all operating levels—are established to guide efforts toward minimizing those aspects and impacts where feasible. The significant environmental aspect at SNL/KTF was found to be greenhouse gas emissions from personnel air travel.

Site Sustainability

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/KTF. Highlights of Sandia's sustainability performance status in 2024 that apply to SNL/KTF include entry of energy data into the DOE sustainability dashboard from fiscal year 2015 to 2024; implementing and actively using power management features on eligible computers and monitors; improving MAN-004, *Sandia National Laboratories/New Mexico Design Standards Manual*; and ensuring that the 350APR "green language" clause continued to be populated in applicable contract categories valued over $250,000.

Environmental Performance

DOE/NNSA assesses environmental performance through data measures and indicators and then reports 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. Sandia received an overall rating of "excellent" for fiscal year 2024.

Under DOE O 232.2A, Chg 1 (MinChg), *Occurrence Reporting and Processing of Operations Information* (DOE O 232.2A, Chg 1 (MinChg) 2017), *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." For this ASER, the Occurrence Reporting and Processing System database was queried for occurrences related to environmental programs and compliance. There was one DOE-reportable occurrence at SNL/KTF in 2024.

Environmental monitoring at SNL/KTF is always performed 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. No sampling data was collected at SNL/KTF in 2024.

Environmental Programs at Sandia National Laboratories, Kaua'i Test Facility

Air Quality Compliance Program. Program personnel support compliance with air quality regulations. The DOE/NNSA Sandia Field Office has a noncovered source permit for the two diesel-fired power generators at SNL/KTF and, in 2024, the generators operated within permitted limits. Sandia personnel prepared two monitoring reports and an annual emissions report that the DOE/NNSA Sandia Field Office submitted to the State of Hawai'i within required timelines. The highest total combined operating hours for the generators for a rolling 12-month period was 394 hours, which occurred from October 2023 to September 2024.

Chemical Information System. The Chemical Information System 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.

SNL/KTF personnel use the Chemical Information System to track and manage chemicals; the system provides the chemical or product name, its location and quantity, and information about who is responsible for the chemical. This electronic inventory helps chemical users and their managers assess and manage workplace hazards. Easy access to this inventory facilitates availability searches. It also improves the ability to share chemicals and thus reduces sources, which minimizes chemical purchases and waste disposal expenses. In 2024, chemical containers at SNL/KTF were tracked in the Chemical Information System along with information about any related chemical hazards.

Cultural Resources Program. The Cultural Resources Program is focused primarily on long-term preservation and protection of cultural resources and cultural resource compliance to ensure that the heritage of Sandia operating areas and their landscapes are maintained. Long-term preservation and protection also ensure that data are available to make proper land use decisions and to assist with environmental planning. The Cultural Resource Program is focused on two main cultural resource categories: archaeological resources and historic buildings. In 2024, seven projects at SNL/KTF were reviewed for cultural resource compliance. These reviews included desktop research and analysis of proposed activities and their impacts. All ground-disturbing activities require cultural resource monitoring. These requirements are captured in a memo sent to the project owner and monitoring is scheduled in advance.

Ecology Program. Ecology Program personnel conduct project assessments to ensure compliance with wildlife regulations and laws and to support land-use decisions at SNL/KTF. In 2024, in accordance with the Endangered Species Act and the Migratory Bird Treaty Act, subcontracted biologists continued to perform routine wildlife surveys, nocturnal lighting compliance surveys, pre- and post-launch area surveys, and preconstruction surveys. All nighttime operations adhered to prescribed biological mitigations during the Dark Skies period from September 15 to December 15, 2024. No fallout for band-rumped storm petrels, Hawai'ian petrels, or Newell's shearwaters was reported at SNL/KTF in 2024.

From November to December 2024, biologists located five Laysan albatross nests containing one egg each at SNL/KTF. Active nest buffers were established, and Ecology Program personnel coordinated with Pacific Missile Range Facility Natural Resources staff

and U.S. Department of Agriculture Wildlife Services personnel to implement appropriate management actions. No nesting attempts were documented for the Hawai'ian goose at SNL/KTF in 2024.

In accordance with Section 7 of the Endangered Species Act, an informal biological consultation was completed for the proposed construction of a Mission Support Building in December 2024. The U.S. Fish and Wildlife Service concurred with DOE/NNSA's conclusion that proposed actions "may affect" but are "not likely to adversely affect" Endangered Species Act protected species in the action area.

In 2024, a Sandia biologist collaborated with sensor experts to monitor environmental impacts from rocket launches at SNL/KTF. They focused on heat, vibration, noise, and overpressure, using various sensors deployed at different distances. The 2024 monitoring confirmed previous findings and provided more detailed data, with no ecological compliance issues identified. These results will guide future environmental reviews and biological compliance efforts.

Environmental Release, Response, and Reporting Team. There were no reportable releases in 2024 at SNL/KTF.

Meteorology Program. Sandia personnel use on-site meteorological instruments at SNL/KTF during test periods to characterize ground-level and atmospheric wind conditions. Climatic information is obtained from Pacific Missile Range Facility personnel when needed, and severe weather notifications are issued automatically by the Pacific Missile Range Facility Emergency Operations Center to all SNL/KTF resident personnel.

National Environmental Policy Act Program. NEPA Program personnel coordinate with DOE/NNSA to ensure NEPA compliance and to provide technical assistance in project planning at SNL/KTF. NEPA Program personnel use an internal checklist to document compliance and verify whether proposed projects and activities and their associated environmental impacts have been evaluated in existing NEPA documentation. In 2024, NEPA Program personnel reviewed four NEPA checklists for ongoing activities at SNL/KTF, including the annual launch and operations checklist. Program personnel improved NEPA Program outreach and support for SNL/KTF, which enhanced project planning by tracking long-lead requirements and verifying that all requirements were met before beginning work. NEPA Program personnel continue to support plans for the construction of a Mission Support Building that will replace current administrative facilities. In 2024, the DOE/NNSA Land Use Agreement between DOE/NNSA and the U.S. Navy was signed.

Oil Storage Program. Oil Storage Program personnel support regulatory compliance associated with the management, operation, and maintenance of oil storage containers and equipment at SNL/KTF. Aboveground oil storage containers at SNL/KTF operate under the Pacific Missile Range Facility Spill Prevention, Control, and Countermeasure Plan as required by 40 CFR 112, *Oil Pollution Prevention*. An underground gasoline storage tank (2,500 gallons) is maintained on-site and is subject to regulation under the Hawai'i Administrative Rules, Title 11, Chapter 280.1, "Underground Storage Tanks," and is permitted with the Hawai'i State Department of Health. In 2024, regulated oil storage

containers and equipment at SNL/KTF consisted of four used oil storage drums, three diesel fuel generator base tanks (two stationary and one mobile), one underground gasoline fuel storage tank, one aboveground diesel fuel storage tank, five oil-filled electrical transformers, and two hydraulic oil equipment reservoirs. There were no reportable oil spills in 2024.

Terrestrial Surveillance Program. Terrestrial Surveillance Program personnel collect surface soil samples at SNL/KTF approximately every 5 years. Environmental surveillance began at SNL/KTF in 1994 and continued in 1999, 2002, 2007, 2012, 2018, and 2022. Soil sampling activities were not conducted at SNL/KTF in 2024.

Waste Management Program. Operations at SNL/KTF generate common office and household solid waste. The site is also classified as a very small quantity generator of hazardous waste. U.S. Environmental Protection Agency Region 9 and the Hawai'i State Department of Health issued a hazardous waste generator identification (HI-0000-363309) to Sandia on September 23, 1994. Hazardous waste was generated in 2024 through normal operations at SNL/KTF. Personnel follow applicable requirements for solid waste and hazardous waste, including regulations applicable to very small quantity generators of hazardous waste (Hawai'i Administrative Rules, Title 11, chapters 260, 261, 262, and 268). No asbestos-containing materials were removed in 2024.

Water Quality Program. The Water Quality Program includes drinking water and wastewater. Drinking water is obtained through the Pacific Missile Range Facility public water system. There are no drinking water or groundwater monitoring wells at SNL/KTF. All three on-site septic tanks were inspected, and one tank was pumped in 2024. There were no wastewater sampling events in 2024. No construction activities required Construction General Permit coverage for stormwater during 2024. In summary, there were no water quality compliance issues in 2024.

Wildland Fire Management Program. The Wildland Fire Management Program at SNL/KTF focuses on restoring landscapes, promoting fire-adapted communities, and implementing effective fire mitigation strategies. As operations at SNL/KTF are on U.S. Navy land, the Navy oversees fire protection planning and response, while Sandia personnel follows their recommendations. Key preparation efforts include coordinating with partners to identify fire hazards, reducing fuel sources through vegetation management, ensuring clear evacuation routes, and maintaining defensible spaces.

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Chapter 1. Introduction to Kaua'i Test Facility

Rocket launch at the Kaua'i Test Facility

OVERVIEW ▪ The Kaua'i Test Facility has been an active rocket-launching facility since 1962. Sandia National Laboratories personnel support a variety of missions at the site, including research and development, operational training, and test and evaluation. Launch projects are conducted for various government agencies and organizations on a noninterference basis.

This annual site environmental report (ASER) was prepared in accordance with and as required by the U.S. Department of Energy (DOE) per DOE O 231.1B, Admin Change 1, *Environment, Safety and Health Reporting* (DOE O 231.1B, Admin Change 1 2012). This report describes the environmental protection programs currently in place at Sandia National Laboratories, Kaua'i Test Facility (SNL/KTF) and is made available to the public in electronic form at Sandia Environmental Reports (Sandia n.d.).

Sandia National Laboratories (Sandia) is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the DOE National Nuclear Security Administration (NNSA). Sandia personnel manage and operate the Kaua'i Test Facility for DOE/NNSA. The DOE/NNSA Sandia Field Office in Albuquerque, New Mexico, administers the prime contract and oversees contractor operations.

While most 2024 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.

1.1 Purpose

Operating since 1949, Sandia's core purpose is to render exceptional service in the national interest. As a federally funded research and development center, Sandia operates in the public interest with objectivity and independence, free from organizational conflicts of interest, maintaining core competencies in missions of national significance. Sandia's principal mission is to deliver on commitments to the nuclear deterrent, nuclear nonproliferation, and critical work for the national security community. Sandia personnel anticipate and resolve emerging national security challenges and inform the national debate for which technology policy is critical to preserving security and freedom throughout the world. Information about new technologies and accomplishments can be found at Sandia News (Sandia 2024).

1.2 History

A brief history of operations at SNL/KTF follows. See Chapter 2 for more details.

1.2.1 Sandia National Laboratories

On November 1, 1949, Sandia Corporation, a wholly owned subsidiary of Western Electric, began managing and operating Sandia Laboratory. In 1979, Congress recognized the facility as a national laboratory. From 1993 to mid-2017, Sandia Corporation was a wholly owned subsidiary of Martin Marietta (merging with Lockheed Corporation in 1995 to form Lockheed Martin Corporation). In May 2017, the managing and operating contract moved to National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc.

At the end of fiscal year 2024, the Sandia workforce (for all sites) comprised approximately 16,915 employees and contractors, with around 16 staff members permanently located at SNL/KTF (Sandia n.d.).

1.2.2 Sandia National Laboratories, Kaua'i Test Facility

SNL/KTF has been an active rocket-launching facility since 1962, predating the establishment of the Pacific Missile Range Facility. Later construction, completed in March 2005, extended the Missile Service Tower to support DOE/NNSA and the Missile Defense Agency. The most recent construction was an upgrade of the launch field power system in 2016. From 1992 to 2024, SNL/KTF personnel have supported 132 launches from SNL/KTF, the Pacific Missile Range Facility, and other mission assets.

SNL/KTF, located on the island of Kaua'i, exists as a facility within the boundaries of the U.S. Department of Defense Pacific Missile Range Facility.

The SNL/KTF launch field was originally designed to accommodate 40 launchpads, but only 15 pads were constructed. Of these, 11 have had their out-of-use launchers removed over the years. In addition to rocket launchpad sites, facilities include missile and payload assembly buildings, launch operations and data acquisition facilities, maintenance shops, and administration and office facilities within a trailer dock compound.

1.3 Location Description

SNL/KTF is located on the western coast of Kaua'i, Hawai'i, within the U.S. Department of Defense (DoD) Pacific Missile Range Facility. There are agricultural fields to the north and east of SNL/KTF, with the Pacific Ocean on the northwest and southwest (Figure 1-1).

Figure 1-1. Kaua'i Test Facility location on Kaua'i, Hawai'i

1.4 Demographics

There were 16 permanent on-site personnel at SNL/KTF in 2024. During campaign operations when rocket launches occurred, approximately 200 additional people worked there. The population of Kaua'i County, Hawai'i was estimated to be 73,840 persons in 2024 (U.S. Census Bureau n.d.).

Kaua'i County includes the islands of Kaua'i, Ni'ihau, Lehua, and Ka'ula. Kaua'i, the largest island at approximately 620 square miles, is the northernmost and most populated island in the county. Ni'ihau is privately owned, and Lehua and Ka'ula are smaller, uninhabited islets.

1.5 Activities and Facilities

Personnel at SNL/KTF support a variety of missions, including research and development, operational training, and testing and evaluation. Personnel conduct launch activities for multiple mission partners, other organizations, and government agencies on a noninterference basis and provide a high-quality integrated facility for conducting a wide range of test operations. These operations support the launch of sounding rocket flight vehicles and payload experiments within a highly dynamic flight environment for component development and flight testing. Resources are available for assembling, testing, and launching instrumented rockets and rocket payloads; receiving, recording, and processing telemetry; and transferring data with remote airborne and ship-borne instrumentation platforms. Operations do not (currently or in the past) involve radioactive materials.

The administrative area of SNL/KTF, known as the Main Compound, and the launch field are within fenced areas near the North Nohili access road. Inside the compound, several trailers and structures are connected by a network of concrete docks and covered walkways. Most of these facilities are used during mission operations to support customers, defense contractor personnel, and technical staff from Sandia National Laboratories, New Mexico (SNL/NM); general maintenance activities are performed during noncampaign operations. In addition, permanent buildings and shelters are in the Main Compound and launch field, some of which are in use year-round to support and maintain facilities at SNL/KTF.

1.5.1 Rocket Launches in 2024

Personnel at SNL/KTF supported four rocket launches in 2024. The launches included the following:

- March 28, 2024 - Missile Defense Agency (MRBM-T3C2), Pad 42
- May 26, 2024 - Navy Test (SL-2), Pad 42
- August 7, 2024 – Missile Defense Agency, Pacific Dragon 24 (ARAV-B), 50K
- August 13, 2024 – Missile Defense Agency, Pacific Dragon 24 (IAMD-T), 50K

1.6 Environmental Setting

Kaua'i is the oldest, northernmost, and fourth-largest island of the main island chain within the volcanic Hawai'ian Archipelago. Kaua'i's varied geographic and topographic features include Waimea Canyon, the Na Pali Coast cliffs, the twin peaks of an old volcano (Mount

Kawaikini and Mount Wai'ale'ale, with 5,243-foot and 5,148-foot elevations, respectively), the Alaka'i Swamp, the flat-lying coastal Mana Plain, and the Barking Sands dune field (DOE/AL 1992).

The low-lying coastal Mana Plain flanks the western slope of the island, forming gentle slopes from the volcanic uplands to the coastal margin (U.S. Navy 2010). The area is relatively flat, ranging in elevation from approximately 5 to 20 feet above mean sea level. Beach dunes parallel to the Pacific Ocean rise above the launch field to a maximum elevation of approximately 100 feet above mean sea level.

1.6.1 Geology

Kaua'i consists of a single massive shield volcano, located at the island's center, which built up from the sea floor by many thousands of thin flows of basaltic lava. The volcanic deposits are now deeply eroded and partly veneered with subsequent volcanic flows. Volcanic rocks exposed on the western half of the island are the oldest and are composed of Pliocene basaltic flows of the Waimea Volcanic Series (U.S. Navy 2010).

Toward the end of the growth of the shield volcano, a period of collapse, faulting, erosion, and subsequent volcanism affected the original surface. The collapse created a broad caldera that is 10 to 12 miles across. Erosion has since destroyed the original surface, and the Alaka'i Swamp occupies slightly dissected remnants.

The rocks of Kaua'i are all volcanic except for minor amounts of sediment derived from the volcanic rocks by erosion and a narrow, discontinuous fringe of calcareous reef and beach deposits (MacDonald, Davis and Cox 1960). The Mana Plain is composed of a wedge of terrestrial and marine sediment (alluvium, lagoon, beach, and dune deposits) that overlie the volcanic basement (DOE/AL 1992).

1.6.2 Surface and Groundwater Hydrology

There are no natural surface water drainages at SNL/KTF, as the sand at the surface is too permeable for rainwater to accumulate and travel laterally (DOE/AL 1992).

The three geologic units (volcanic bedrock, alluvium, and dune deposits) underlying SNL/KTF constitute three different but hydraulically connected aquifers. The groundwater from all three units tends to be brackish, not potable, and not suitable for irrigation (DOE/AL 1992). No groundwater wells are located on SNL/KTF.

1.6.3 Ecology

A description of the ecological setting—including vegetation types, wildlife, protected species, and threatened and endangered species—at the Pacific Missile Range Facility and SNL/KTF is detailed in Chapter 3.

1.6.4 Climate

The climate at SNL/KTF is typical of maritime subtropical islands with an average daily temperature range of 84°F to 66°F. August is the warmest month of the year, with daytime highs averaging 87°F and lows averaging 69°F. January is the coolest month, with daytime

highs averaging 79°F and lows averaging 62°F. The region is strongly influenced by the Pacific subtropical high-pressure system. There are two main seasons in tropical and subtropical areas: a wet season and a dry or windy season.

SNL/KTF is located on the lee side of the island, which receives less annual rainfall than the eastern and mountainous areas of Kaua'i. The lee side exhibits more arid conditions, with an average annual rainfall of approximately 23 inches. The wet season generally starts in October and extends into March. June to August are the driest months of the year, with an average of less than 1 inch of rain per month (Western Regional Climate Center n.d.).

Winds are mostly from easterly directions on Kaua'i. The northeast and southeast trade winds generally blow between 15 and 25 miles per hour. This global subtropical trade wind pattern occasionally becomes disrupted in the winter when cool, wet systems approach the island from the west or northwest. Relative humidity ranges from 60 to 70 percent in the summer to near 80 percent during the wet season. Direct hits from typhoons or hurricanes are rare in the Hawai'ian Islands, though damage from nearby storms may occur. The most destructive hurricane to hit Kaua'i was Hurricane Iniki in September 1992.

At 5.1 million years old, Kaua'i is the oldest of the major islands in the Hawai'ian archipelago and is sometimes referred to as the Garden Island. Kaua'i features breathtaking landscapes, including lush valleys, dramatic mountain peaks, and steep cliffs shaped by natural forces over time. Centuries of growth have given rise to tropical rainforests, winding rivers, and stunning waterfalls. Some regions of Kaua'i are accessible solely by sea or air.

1.7 Overview of the Environmental Management System

Sandia integrates environmental protection with its missions through the Environmental Management System. The Environmental Management System is a set of interrelated elements used to establish policy and environmental objectives that enable Sandia personnel to reduce environmental impacts and increase operating efficiencies through a continuing cycle of planning, implementing, evaluating, and improving processes. The scope of Sandia's Environmental Management System encompasses all activities, products, and services that have the potential to interact with the environment at all of Sandia's numerous locations.

Sandia has established environmental programs at SNL/KTF (listed in Section 1.8) that are instrumental in the implementation, maintenance, and continual improvement of the Environmental Management System at this site. For more information on the Environmental Management System, see Section 5.2.

1.8 Environmental Programs and Focus Areas

The current environmental programs and focus areas are presented in Figure 1-2.

Figure 1-2. Environmental programs and focus areas at SNL/KTF

The following chapters and sections detail the current environmental programs and focus areas at SNL/KTF:

- Cultural Resources Program (Chapter 2)
- Ecology Program (Chapter 3)
- National Environmental Policy Act Program (Section 4.1)
- Chemical Information System (Section 4.2)
- Waste Management Program (Section 4.3)
- Air Quality Compliance Program (Section 4.4)
- Meteorology Program (Section 4.5)
- Oil Storage Program (Section 4.6)
- Terrestrial Surveillance Program (Section 4.7)
- Environmental Release, Response, and Reporting Team (Section 4.8)
- Water Quality Programs (Section 4.9)
- Wildland Fire Management Program (Section 4.10)

In addition, a summary of compliance efforts is provided in Chapter 5. Due to the absence of sampling data collected at SNL/KTF in 2024, details regarding quality assurance for environmental sampling are not provided in this ASER.

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Chapter 2. Cultural Resources Program

Foliate on revetment separating administrative compound from launch field, Kaua'i Test Facility (Photo by Joseph M. Bonaguidi)

OVERVIEW ▪ Cultural Resources Program personnel coordinate cultural resource compliance, including review of archaeological sites and historic buildings. Actions that could affect cultural resources adversely are analyzed initially in a NEPA checklist review. DOE/NNSA is responsible for ensuring that impacts on cultural resources are assessed and that appropriate actions are taken to mitigate those impacts.

Cultural Resources Program personnel focus primarily on long-term preservation and protection of cultural resources and cultural resource compliance to ensure that the heritage of Sandia operating areas and their landscapes are maintained. Long-term preservation and protection practices also ensure that data are available to make proper land-use decisions and to assist with environmental planning. *Cultural resources* are places and physical evidence of past human activity: a site, an object, a landscape, a structure, or a natural feature of significance to a group of people traditionally associated with it. There are two main cultural resource categories: archaeological resources and historic buildings.

Approximately seven archaeological surveys were conducted between 1976 and 2024 at SNL/KTF. Monitoring of all construction activities is required in the areas from Kekaha to the south and Polihale to the north of the Pacific Missile Range Facility as well as in intermediate areas.

In 2006, the Sandia historian conducted a survey of the SNL/KTF built environment. No final report with recommendations was completed. However, the survey and the context provided by that survey support consultations at SNL/KTF. None of the buildings or structures involved in undertakings since 2006 have been determined to be eligible for the National Register of Historic Places.

In 2023, Sandia subcontracted International Archaeology, LLC to conduct a baseline archaeological survey of the entire SNL/KTF property and to monitor the excavation of preconstruction trenches. This survey resulted in the documentation of eight sites, all of which have been evaluated as not eligible to the National Register of Historic Places. The consultation with the Hawai'i State Historic Preservation Division on this report is currently pending. Additionally, there were 27 consultation letters sent to Native Hawaiian organizations regarding the baseline survey and the trenching activities.

2.1 Cultural History

Three major historical periods are used to define traditions on Kaua'i: Pre-Contact Period (circa AD 450–1778) to Early Historic Period (AD 1778–1800), Contact Period (AD 1778–1850), and Mahele Period (AD 1830–1870).

Much of the knowledge regarding traditional land-use patterns at SNL/KTF is based on what was recorded at the time of, and shortly after, Western contact. Early records (e.g., journals kept by travelers and missionaries) documented Hawai'ian traditions from that time, and archaeological investigations have assisted with understanding the past. Kaua'i consists of six *moku* (land divisions that section off portions of the island): Kona, Puna, Ko'olau, Halele'a, Napali, and Waimea (Moffat and Fitzpatrick 1995). *Ahupua'a* (smaller land divisions within the moku) incorporate the natural resources necessary for traditional subsistence strategies. SNL/KTF is in the ahupua'a of Waiawa, which is in the Kona moku of Kaua'i.

Archaeology is the study of the human past through material remains. Contrary to popular belief, Archaeologists do not study dinosaurs, Paleontologists do.

Previous archaeological work outside of SNL/KTF but at nearby Barking Sands on the Mana Plain led to the identification of prehistoric habitation and multiple types of features made by and utilized by humans (i.e., a fire pit, bedrock mortars, and shelters). Archaeological and historical records of the area revealed that Native Hawai'ians used five environmental zones during traditional (Contact and Mahele) times in the western region of Kaua'i: coastal and beach dunes, marshlands, cliff slopes, valleys, and upper mountain slopes. Archaeological studies along the coast and further inland revealed habitation, religious sites, and agricultural sites that date from AD 1120–1310 (Sweeney 1994).

2.2 Historical Context

Figure 2-1 below displays a timeline of important historic events related to the establishment of Kaua'i Test Facility. Sandia first used space at Bonham Air Force Base in 1962 to set up a rocket-launching facility in support of the Operation Dominic nuclear test series based in the Pacific at Christmas and Johnston islands. Sandia's site was used to launch diagnostic rockets to support analysis of Operation Dominic's high-altitude nuclear shots. Sandia personnel were able to launch instrumentation rockets simultaneously with small rockets launched from Johnston Island 700 miles away.

Sandia operations on Kaua‘i were expected to end after Operation Dominic. However, when ratifying the 1963 Limited Test Ban Treaty, the U.S. Congress placed conditions—safeguards—on its approval. The United States needed to remain ready to resume atmospheric nuclear testing should another nation break the treaty or should the United States have another imperative for these tests. As part of the support for this readiness program, Sandia maintained the test range on Kaua‘i, establishing a permit with the U.S. Navy to continue using the SNL/KTF site at the Pacific Missile Range Facility. The readiness requirement was dropped in the 1970s, but Sandia's rocket-launching capabilities at SNL/KTF remained in demand.

1920s	A pasture near Barking Sands was used as a landing field by private pilots.
1928	The Territorial Aeronautical Commission took control of the field, with the Barking Sands Landing Field (the Mana Airport) used as a stopover for transpacific flights.
WWII	The U.S. Army and U.S. Navy used the site, acquiring additional land and building more facilities.
1948	The U.S. Air Force took over Barking Sands, renaming it Bonham Air Force Base.
1954	Bonham Air Force Base was declared excess, although no disposal action was taken.
1962	The Atomic Energy Commission obtained permission for Sandia to use space at Bonham to set up a rocket-launching facility in support of the Operation Dominic nuclear test series.
1962	Sandia engineers surveyed the site and planned for 40 launchpads, then used the site to launch instrumentation rockets during the Dominic high-altitude shots.
1966	Bonham was transferred from the U.S. Air Force to the U.S. Navy – the base became the Pacific Missile Range Facility.
1963	The U.S. Congress ratified the Limited (Partial) Test Ban Treaty; safeguards placed on that approval included the Readiness Program, in which the U.S. would remain ready to return to nuclear testing. The Kaua'i Test Facility was kept operational in support of Readiness.
1970s	Readiness ended but Sandia's well-established rocket-launching capabilities at SNL/KTF remained in demand.

Figure 2-1. Timeline of historic events related to the establishment of SNL/KTF

2.3 Regulatory Criteria

Ensuring compliance with federal and state requirements supports the long-term preservation and protection of cultural resources, prevents mission delays, and maintains trust and a strong relationship with DOE/NNSA and the Hawai‘i State Historic

Preservation Division. See Chapter 5 for details on state and federal requirements related to cultural resources.

2.4 Archaeological Resources

The Sandia archaeological staff assists Sandia personnel and DOE/NNSA in maintaining compliance with the National Historic Preservation Act, Section 106 (PL 89-665 1966) requirements. This ensures that (1) cultural resources and their historic and cultural heritage are preserved and protected and (2) data are available to make appropriate land-use and environmental-planning decisions at SNL/KTF.

Sandia's archaeological staff reviews National Environmental Policy Act (NEPA) checklists that involve land disturbances and provides recommendations for monitoring field activities to avoid an adverse effect on archaeological resources. The archaeological staff make site eligibility recommendations for inclusion in the National Register of Historic Places. In addition, the archaeological staff ensures that local, Native Hawai'ian cultural resource management personnel who are permitted by the state perform any archaeological work.

2.4.1 Field Methods

Local archaeological personnel who hold state-required permits to conduct archaeological work in Hawai'i at SNL/KTF are subcontracted to monitor all work that will disturb land. In addition, the subcontracted archaeological personnel provide recommendations regarding the potential effect of proposed undertakings on prehistoric and historic properties. These include recommendations regarding a site's eligibility for nomination to the National Register of Historic Places for Cultural Properties and Historic Preservation and project mitigation.

The subcontracted archaeological personnel write reports of findings and associated documentation and provide them to the Sandia archaeological staff for review. The reports and associated documents are then provided to the DOE/NNSA Sandia Field Office, including a consultation letter addressed to the Hawai'i state historic preservation officer and to Native Hawaiian organizations, for review and use in consultation.

—Program Activities and Results 2024: Archaeological Resources

In 2024, seven projects at SNL/KTF were reviewed for cultural resources compliance. In 2023, permitted local Hawai'ian archaeologists who met the State of Hawai'i archaeological requirements completed a baseline archaeological survey and oversaw trenching on-site. Their results were captured in a report that was submitted to Cultural Resources Program personnel and accompanied a consultation letter from the DOE/NNSA Sandia Field Office to the Hawaii State Historic Preservation Division. In 2024, an additional 27 consultation letters were sent to Native Hawai'ian organizations regarding the 2023 baseline survey work and the trenching activities.

2.5 Historic Buildings

Since 2006, environmental planning and cultural resource management at SNL/KTF have included historic building assessments and compliance with National Historic Preservation Act, Section 106 requirements. The Sandia historian conducts historic building assessments and makes recommendations to DOE/NNSA regarding the eligibility of SNL/KTF properties for the National Register of Historic Places.

2.5.1 Methods

Sandia's historian reviews proposed project details, analyzes existing photographs and documents about the facilities involved, conducts additional research in the archives and building drawings collection to understand a property's past and current role in operations at SNL/KTF, and evaluates the building's history. Note is made of any previous assessments and resulting determinations regarding a property's eligibility for the National Register of Historic Places.

If there are any questions regarding proposed work and its potential impact on a property or properties, the historian discusses the matter with the project owner and the NEPA specialist. The project owner may submit renderings of the anticipated appearance of the property after work is completed, and the historian may suggest alternate locations, materials, or methods to avoid adverse effects on the property.

Once a property is understood in context, the historian makes a recommendation about whether it is eligible for inclusion in the National Register of Historic Places, summarizing past determinations and any subsequent changes to the property. The historian also makes a recommendation about whether proposed work will have an adverse effect on any historic properties or districts, including the property where the work is occurring. Information regarding the property, photographs, maps, a description of the proposed work, any impacts, and the overall recommendation on eligibility are captured on a Hawai'i State Historic Preservation Division HRS 6E Submittal Form. The historian's recommendation and any indication of a need for further action are captured in the NEPA checklist subject matter expert review. The HRS 6E Submittal Form and a consultation letter addressed to the Hawai'i State Historic Preservation Division are submitted to DOE/NNSA for review and use in consultation. When DOE/NNSA consults, the historian submits the requisite documentation to the Hawai'i Cultural Resource Information System.

2.5.2 Previous Building Surveys, Assessments, and Determinations

The 2006 historic building survey provides a basic understanding the properties at the site and for generating Hawai'i State Historic Preservation Division HRS 6E Submittal Forms as properties face renovation or demolition. No site-wide assessment or historic context statement (providing the framework for evaluating a property for historic significance) exists. No sitewide consultation has occurred.

For each project undertaken since 2006—including minor repair activities, large-scale renovations, and demolition—DOE/NNSA, in consultation with the Hawai'i State Historic Preservation Division, has determined that the properties involved are not eligible for the National Register of Historic Places. The SNL/KTF property has undergone significant

modification (and removal) of key early facilities and no longer represents its early Cold War and Readiness Program activities.

—Program Activities and Results 2024: Historic Buildings

No projects affecting the built environment were undertaken in 2024. No documentation was prepared, and no consultations with the Hawai‘i State Historic Preservation Division were undertaken.

Chapter 3. Ecology Program

Hawai‘ian goose (*Branta sandvicensis*)

OVERVIEW ▪ Ecology Program personnel help operations comply with wildlife regulations and laws by providing biological evaluations and surveys in support of site activities. Ecological data is collected on plants and wildlife to support documentation, land-use decisions, and ecological and wildlife awareness campaigns to ensure safe work environments and sustainable decision-making strategies.

Ecology Program personnel support site activity and project compliance with wildlife and vegetation requirements by conducting biological evaluations and coordinating surveys. Ecological compliance promotes conservation through the protection of native wildlife and their habitats. Ecology Program personnel oversee independent sub-contracted biologists.

The introduction of non-native species coupled with human development across the Hawai‘ian Islands' small footprint has made many island species disproportionally rare compared to continental species. Due to the magnitude of these threats, numerous species on the island of Kaua‘i are protected by the Endangered Species Act. Many of these are upland forest species who find little or no suitable habitat at SNL/KTF. These species would not likely occur at SNL/KTF. Lowland species listed as endangered or threatened are known to occur in the general SNL/KTF area and have been recorded on-site occasionally. An *endangered species* is any species that is in danger of extinction throughout all or a significant portion of its range. A *threatened species* is any species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. The lowlands of Kaua‘i are home to other endemic, indigenous, and migratory birds, which are all protected under the Migratory Bird Treaty Act. Species that are protected under the Endangered Species Act are presented in Section 3.3. Additionally, all native wildlife at SNL/KTF is protected under Hawai'i State laws as endangered, threatened, or indigenous species. Species protected under the Marine Mammal Protection Act are present nearby.

However, current SNL/KTF boundaries do not include any beach or other habitats used by marine mammals. Ecology Program personnel collaborate, as appropriate, with Pacific Missile Range Facility Natural Resources personnel regarding Marine Mammal Protection Act efforts.

DOE/NNSA submitted a biological evaluation for launch activities at SNL/KTF in June 2021 (DOE/NNSA/SFO 2021). This evaluation reviewed potential impacts on protected species resulting from SNL/KTF launch activities. The United States Fish and Wildlife Service (USFWS) response concurred with the determination that the proposed project "may affect" but is "not likely to adversely affect" species listed as endangered or threatened in the area adversely when specified avoidance and minimization measures are implemented (USFWS 2021).

In February 2022, the Pacific Missile Range Facility and the U.S. Navy resubmitted their final biological assessment for effects of base infrastructure, operations, and maintenance at Pacific Missile Range Facility sites on Kaua'i. The biological assessment covers base operations and activities conducted by tenants, including DoD and DOE/NNSA. Specific actions covered under this biological assessment include updated air operations, bird/wildlife aircraft strike hazard management activities, hazing and nest removal near launch pads, use of the driving range and athletic fields, oxidation pond management and upgrades, relocation of Hawai'ian goose families in unsafe situations, vehicular driving, vegetation maintenance, construction activities, hazing for bird protection and safety, and the development of a hunting program (U.S. Navy 2022).

DOE/NNSA completed an informal biological consultation for the proposed construction of a Mission Support Building at SNL/KTF in December 2024 (DOE/NNSA/SFO 2024). The Mission Support Building would replace the current administrative facility structures. Based on project activities and the implementation of proposed mitigation measures to protect listed species during construction of the Mission Support Building, the USFWS concurred with the DOE/NNSA conclusion that proposed actions "may affect" but are "not likely to adversely affect" Endangered Species Act-protected species potentially present in the action area. Critical habitats are not present in the action area, and there is no plausible route of effects to nearby unoccupied critical habitat. Additional information can be found in Section 3.3.

GN470121, *Ecological Compliance at Sandia National Laboratories, Kaua'i Test Facility* (Sandia 2025), describes procedures that personnel would take to address potential impacts from operations and activities at SNL/KTF on protected species that are known to occur in the area. All mitigation measures and terms and conditions from applicable USFWS biological opinions are incorporated in this ecological compliance document. This document is revised periodically to ensure that all conservation actions and compliance processes are current. A 2024 change was completed to include a site-specific predator control standard operating procedure. The predator control procedure addresses invasive species threats by implementing monitoring and targeted predator trapping at SNL/KTF.

DOE/NNSA and the U.S. Department of Navy completed a Memorandum of Agreement in December of 2023. The memorandum provided clarity regarding the environmental roles and responsibilities at SNL/KTF. The clarification aims to enhance operational efficiency

and promote the alignment of goals between the involved agencies (DOE/DoD 2023). Sandia's Ecology Program operates within the established memorandum framework to partner with Pacific Missile Range Facility Natural Resources. Personnel in both programs work in close cooperation to discuss proposed and ongoing projects and evaluate compliance processes to ensure that ecological program actions remain aligned.

3.1 Vegetation

Evolving on an isolated subtropical archipelago, the native plants of the Hawai'ian Islands are both unique and diverse. Kaua'i is the oldest of the main Hawai'ian islands and contains many endemic plant species. A vast portion of the western side of Kaua'i, from Waimea to Polihale, once contained an expansive wetland habitat. This region, known as the Mana Plain, was drained and converted to agricultural lands in the early 1900s. With this drastic transformation, the introduction of numerous invasive plant species shaped the current landscape of the Mana Plain, where SNL/KTF is located. Some aquatic habitats can still be found in the form of man-made ditches and reservoirs.

Seven vegetation types are recognized on the undeveloped portions of the Pacific Missile Range Facility, which includes SNL/KTF: kiawe (*Prosopis pallida*)/koa-haole (*Leucaena leucocephala*) scrub, a`ali`i (*Dodonaea viscosa*)-nama (*Nama sandwicensis*) scrub, pohinahina (*Vitex rotundifolia*), naupaka (*Scaevola sericea*) dune, strand, drainage-way wetlands, and ruderal (plant species that are first to colonize disturbed areas) vegetation. Kiawe/koa-haole and a`ali`i-nama scrub are the dominant vegetation types in the undeveloped portions of the Pacific Missile Range Facility and SNL/KTF. A`ali`i and nama are native endemic species to the Hawai'ian islands, while kiawe and closely associated koa-haole are invasive plants. Kiawe-koa-haole is the dominant vegetation type present in the relatively undisturbed areas of the sand dunes associated with SNL/KTF and Polihale State Park and along the cliff face in a restricted easement area. Because of off-highway vehicle restrictions, vegetation that grows on sand dunes within the Pacific Missile Range Facility and SNL/KTF boundaries is less disturbed than vegetation in Polihale State Park. A well-developed, native-strand community exists along the shoreline. Common plants that inhabit the sandy beach habitat on Kaua'i include beach naupaka, pohinahina, pohuehue (*Ipomea pes-caprae*), milo (*Thespesia populnea*), and hau (*Hibiscadelphus distans*).

The composition of the kiawe/koa-haole vegetation community can vary from pure stands of kiawe to pure stands of koa-haole or any combination of the two. The kiawe trees often attain a height of 45 feet or more. The understory is commonly koa-haole except where the kiawe trees form a canopy. The height of the koa-haole depends to a large degree on the presence or absence of the kiawe trees. Ground cover varies and may consist of pure stands of Guinea grass (*Panicum maximum*), lantana (*Lantana camara*), or clove basil (*Ocimum gratissimum*). However, the most common ground cover is mixed forbs (herbaceous flowering plants that are not a grass) and grasses.

The majority of SNL/KTF is occupied by an open, woody scrub or a ruderal community of plants that is mowed regularly. The open scrub community is comprised mostly of introduced species, although there are some Hawai'ian taxa to be found along the roads. These are worthy of mention because, even in such highly disturbed areas as roadways, the

native plants can and do persist. Taken together, the open scrub communities occupy most of the land area at SNL/KTF.

The coastal flatlands of western Kaua'i, where the Pacific Missile Range and SNL/KTF are located, are known as the Mana Plain. This region historically was an expansive wetland complex that was converted to primarily agricultural lands (Hawaii DLNR 2025). Wetland areas exist along parts of the coastline west of SNL/KTF. The USFWS has classified these areas as estuarine and marine deepwater wetlands (Figure 3-1). There is also a wetlands area to the south of SNL/KTF along Nohili Ditch, which is classified as Riverine System. There is potential for aquatic vegetation types and accompanying waterbird species to be present on or near SNL/KTF property during wet periods. The agricultural lands and ditch systems along the eastern edge of SNL/KTF are a combination of freshwater emergent wetlands and riverine systems that serve as waterbird habitats and sanctuaries.

Figure 3-1. Wetland areas around SNL/KTF

Two federally listed plant species have been observed north of, but not on, the Pacific Missile Range Facility. Ohai (*Sesbania tomentosa*), a spreading shrub, is an endangered species that has been observed in the sand dunes to the north of the Pacific Missile Range Facility in Polihale State Park and could potentially occur at SNL/KTF. Lau`ehu (*Panicum niihauense*), an endangered species of rare grass, has been observed near Queens Pond, also north of the Pacific Missile Range Facility (Sandia 2020). Unoccupied critical habitat for lau`ehu has been established to the north and west of SNL/KTF.

Using the USFWS Information for Planning and Consultation tool, nine additional federally listed plant species have been identified as potentially present around SNL/KTF: ʻawikiwiki (*Canavalia pubescens*), awiwi (*Schenkia sebaeoides*), Carter's panicgrass (*Panicum fauriei var. carteri*), dwarf naupaka (*Scaevola coriacea*), ihi (*Portulaca villosa*), lau'ehu (*Panicum nihauense)*, ohai (*Sesbania tomentosa*), popolo (*Solanum nelsonii*), and pu'uka'a (*Cyperus trachysanthos*). These plant species are associated with coastal beach, coastal dune, coastal shrubland, and/or cliff seep habitats found near sea level. While some of these habitats exist outside the SNL/KTF boundary, none of the nine species listed here have been documented at SNL/KTF. The State of Hawai'i automatically includes all federally listed threatened or endangered species as threatened or endangered under state wildlife laws.

3.2 Wildlife

Evolutionary isolation has resulted in distinctive wildlife found only on the Hawaiʻian archipelago. The birds, mammals, and reptiles that have been observed and documented at and near SNL/KTF are the result of Kauaʻi's unique biogeography combined with the introduction of many exotic species.

An *exotic* species, which may be invasive or noninvasive, is not native to the environment.

3.2.1 Birds

More than 50 species of birds have been identified in the general Pacific Missile Range Facility area, although not specifically at SNL/KTF. Endemic species include: Hawaiʻian coot (*Fulica alai*), Hawaiʻian duck (*Anas wyvilliana*), Hawaiʻian gallinule (formerly Hawaiʻian moorhen) (*Gallinula galleta sandvicensis*), Hawai'ian goose (*Branta sandvicensis*), Hawaiʻian petrel (*Petrodroma sandwichensis*), Hawaiʻian short-eared owl (*Asio flammeus sandwichensis*), Hawaiʻian stilt (*Himantopus mexicanus knudseni*), and Newell's shearwater.

Bird species protected under the Migratory Bird Treaty Act that have been observed at SNL/KTF include the black-crowned night heron (*Nycticorax nycticorax*), great frigatebird (*Fregata minor*), Hawai'ian short-eared owl (*Asio flammeus sandwichensis*), Laysan albatross (*Diomedea immutabilis*), Pacific golden plover (*Pluvialis fulva*), and ruddy turnstone (*Arenaria interpres)*. The Laysan albatross uses the lawn-like ruderal vegetation areas for courtship and nesting. Both breeding and non-breeding Laysan albatross are observed in the SNL/KTF area from October through April/May. Other protected species known to exist within or near SNL/KTF include the brown noddy (*Anous stolidus*), sanderling (*Calidris alba*), wandering tattler (*Heteroscelus incanus*) and, wedge-tailed shearwater (*Puffinus pacificus chlororyncus*) along with the Endangered Species Act-listed endangered Hawai'i Distinct

Population Segment of the band-rumped storm petrel (*Oceanodroma castro*). Migratory Bird Treaty Act-protected barn owls (*Tyto alba*) and house finches (*Haemorhous mexicanus*) are also present on and around SNL/KTF but are introduced species.

Common introduced (non-native) species include the African silverbill (*Euodice cantans*), common myna (*Acridotheres tristis),* house sparrow (*Passer domesticus*), Java sparrow (*Lonchura oryzivora),* red-crested cardinal (*Paroaria coronata*), and zebra dove (*Geopelia striata*). Past wildlife surveys of birds and mammals conducted at SNL/KTF found 20 species of birds throughout the facility.

Five of the bird species observed at SNL/KTF are federally listed as endangered: Hawai‘ian coot, Hawai‘ian duck, Hawai‘ian gallinule, Hawai‘ian petrel, and Hawai‘ian stilt. In addition, Newell's shearwater and the Hawai‘ian goose, both recorded at SNL/KTF, are federally listed as threatened. These species all have special protections under the Endangered Species Act as administered by the USFWS.

The Hawai‘ian coot, Hawai‘ian duck, Hawai‘ian gallinule, and Hawai‘ian stilt use wetlands habitat (e.g., the Nohili Ditch system, ditch systems along the eastern edge of SNL/KTF, and several reservoirs on the Mana Plain) for breeding, nesting, and feeding.

In 2019, the Hawai‘ian goose federal status changed from endangered to threatened. The Hawai‘ian goose is encountered frequently and regularly nests at the Pacific Missile Range Facility Main Base. SNL/KTF lacks preferred nesting habitat for the Hawai‘ian goose. However, because of crowding, there is a potential for species movement onto the facility. In addition, nonbreeding individuals are observed occasionally.

The Newell's shearwater is a pelagic (open sea) species that once nested on all the major Hawai‘ian Islands. However, it has become extinct on the islands of Hawai‘i, Maui, Molokai, and Oahu due to the introduction of the mongoose in the late 1800s. Kaua‘i provides the last Hawai‘ian habitat for this federally listed threatened species.

Newell's shearwaters nest during the spring and summer months (April to November) in the interior mountains of Kaua‘i. Nestlings leave the breeding grounds in October and November, departing by themselves shortly after nightfall and heading for the open ocean, guided by the reflection of moonlight on the water. Being inexperienced and naturally attracted to bright lights, they tend to collide with trees, utility lines, buildings, and automobiles. The unintentional grounding of fledgling seabirds due to disorientation from artificial lighting sources is referred to as "fallout." The most critical period when Newell's shearwaters might have flight accidents is one week before and one week after the new moon in October and in November.

The Hawai‘ian petrel may traverse the area from their nesting grounds to the sea. Fledging of the Hawai‘ian petrel occurs in October, slightly earlier than for the Newell's shearwater.

Mitigation measures that have been implemented to minimize fallout for the Newell's shearwater also benefit other protected seabirds that are susceptible to disorientation from artificial lighting.

3.2.2 Mammals

More than one dozen species of mammals are known to occur on the island of Kauaʻi. An overwhelming majority of these species are exotic. Past surveys found mammal species such as feral cats (*Felis catus*), feral dogs (*Canis lupus familiaris*), and small rodents (*Muroidea* spp.) within SNL/KTF. Feral dogs are known to roam the areas around SNL/KTF. At least four species of rodents are expected to be present at SNL/KTF: house mouse (*Mus musculus*), Norway rat (*Rattus norvegicus*), Pacific rat (*Rattus exulans*), and roof rat (*Rattus rattus*). Feral pigs (*Sus scrofa)* are common across the Hawaiʻian islands and are regularly encountered on the Pacific Missile Range Facility and SNL/KTF. Black-tailed deer (*Odocoileus hemionus*) were introduced to Kauai for hunting and are managed by the State of Hawai'i Department of Land and Natural Resources. Black-tailed deer are occasionally observed at SNL/KTF. Introduced mammal species pose a serious threat to native wildlife, particularly birds. Hawaiʻi's native wildlife did not evolve with mammalian predators and therefore have few defensive traits.

The Hawaiʻian hoary bat (*Aeorestes semotus*) is protected under the Endangered Species Act as an endangered species. The species is most common in regions between sea level and 4,000 feet that receive 20 to 90 inches of rain per year. This bat roosts alone or with dependent young in native and non-native trees, typically more than 4.6 meters tall (Amlin and Siddiqi 2015). The Hawaiʻian hoary bat has been recorded at the Pacific Missile Range Facility, and it is known to feed offshore and to occur at the Polihale State Park north of SNL/KTF.

The Hawaiʻian monk seal (*Monachus schauinslandi*) is protected under the Marine Mammal Protection Act, is protected as an endangered species under the Endangered Species Act, and is one of two mammals endemic to Hawaiʻi. Hawaiʻian monk seals use sandy beaches to give birth and use vegetation behind beaches for shelter. Hawaiʻian monk seals are only occasionally reported around the main Hawaiʻian Islands (USFWS 2018), although they regularly haul-out on Pacific Missile Range Facility Main Base beach. "Haul-out" refers to the behavior of temporarily leaving the water and moving onto land to reproduce or rest. Sightings of Hawai'ian monk seal haul-outs are documented by the Pacific Missile Range Facility Environmental Office (U.S. Navy 2010). There is no shoreline within the SNL/KTF boundary.

3.2.3 Reptiles

Of the five species of marine turtles listed on the Endangered Species Act that may occur near SNL/KTF, only the Pacific green sea turtle (*Chelonia mydas*) is commonly encountered. Currently, no listed terrestrial reptiles or amphibians are expected to occur on SNL/KTF property.

The Pacific green sea turtle is protected under the Endangered Species Act as threatened. The species inhabits pelagic habitat as juveniles and benthic (deep sea) habitat around all the Hawaiʻian Islands as adults. Adult turtles are known to rest along ledges and in caves and to forage in shallow intertidal and subtidal waters around the main islands. The turtles use sandy beaches for nesting during the summer months. Hatchlings emerge between July and October.

Pacific green sea turtles are known to use Barking Sands coastal waters for foraging and beaches for basking routinely. Pacific green sea turtles are commonly observed basking on the beach and in the waters at the Nohili Ditch outfall, often referred to as the Turtle Cove area. Green turtles have been documented nesting at Barking Sands frequently in recent years with nine confirmed nests laid between 2015 and 2020. Nests have been observed on the southern coast of Barking Sands and the beach near the southern end of the airfield. There is no shoreline within the SNL/KTF boundary.

Leatherback sea turtles (*Dermochelys coriacea*) and hawksbill sea turtles (*Eretmochelys imbricata*) are relatively rare, and while there are no known reports of these species nesting near the Pacific Missile Range Facility, they have been reported in the open waters off Kauaʻi.

3.3 Federally Listed and State-Listed Threatened and Endangered Species

The purpose of the Endangered Species Act is to protect all animal, plant, and insect species that are federally listed as threatened or endangered. Table 3-1 includes federally listed and state-listed threatened and endangered species that potentially occur or are confirmed to occur at SNL/KTF (Sandia 2020). In Hawai'i, all indigenous wildlife is protected under state law.

Table 3-1. Federally listed and state-listed threatened and endangered species potentially occurring or confirmed at SNL/KTF

Common Name	Scientific Name	Federal Status	State Status
Birds			
Band-rumped storm petrel	*Oceanodroma castro*	Endangered	Endangered
Hawai'ian common gallinule	*Gallinula galeata sandvicensis*	Endangered	Endangered
Hawai'ian coot	*Fulica americana alai*	Endangered	Endangered
Hawai'ian duck	*Anas wyvilliana*	Endangered	Endangered
Hawai'ian goose	*Branta sandvicensis*	Threatened	Endangered
Hawai'ian petrel	*Pterodroma sandwichensis*	Endangered	Endangered
Hawai'ian stilt	*Himantopus mexicanus knudseni*	Endangered	Endangered
Newell's shearwater	*Puffinus newelli*	Threatened	Threatened
Mammals			
Hawai'ian hoary bat	*Lasiurus cinereus semotus*	Endangered	Endangered
Hawai'ian monk seal	*Neomonachus schauinslandi*	Endangered	Endangered
Reptiles			
Green sea turtle	*Chelonia mydas*	Threatened	Threatened
Hawksbill sea turtle	*Eretmochelys imbricata*	Endangered	Endangered
Plants			
ʻĀwikiwiki	*Canavalia pubescens*	Endangered	Endangered
Awiwi	*Schenkia sebaeoides*	Endangered	Endangered
Carter's panicgrass	*Panicum fauriei var. carteri*	Endangered	Endangered
Dwarf naupaka	*Scaevola coriacea*	Endangered	Endangered
Ihi	*Portulaca villosa*	Endangered	Endangered

Common Name	Scientific Name	Federal Status	State Status
Lau'ehu	*Panicum niihauense*	Endangered	Endangered
Ohai	*Sesbania tomentosa*	Endangered	Endangered
Popolo	*Solanum nelsonii*	Endangered	Endangered
Pu'uka'a	*Cyperus trachysanthos*	Endangered	Endangered

Federal Endangered Species Act status:
Endangered - Any species which is in danger of extinction throughout all or a significant portion of its range.
Threatened - Any species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Hawai'i status:
Endangered - Any species whose continued existence as a viable component of Hawaii's indigenous fauna or flora is determined to be in jeopardy and has been so designated.
Threatened - Any species of aquatic life, wildlife, or land plant which appears likely, within the foreseeable future, to become endangered and has been so designated.

—Program Activities and Results 2024: Ecology

In accordance with the Endangered Species Act and the Migratory Bird Treaty Act, sub-contracted biologists performed compliance support activities in 2024. Observations of protected native species from SNL/KTF in 2024 are captured in Figure 3-2. Survey frequency varies throughout the year, with weekly wildlife surveys and periodic nest searches occurring during the summer months and more frequent surveys during the Hawai'ian goose breeding season. Notable observations and any applicable compliance actions are summarized by species below.

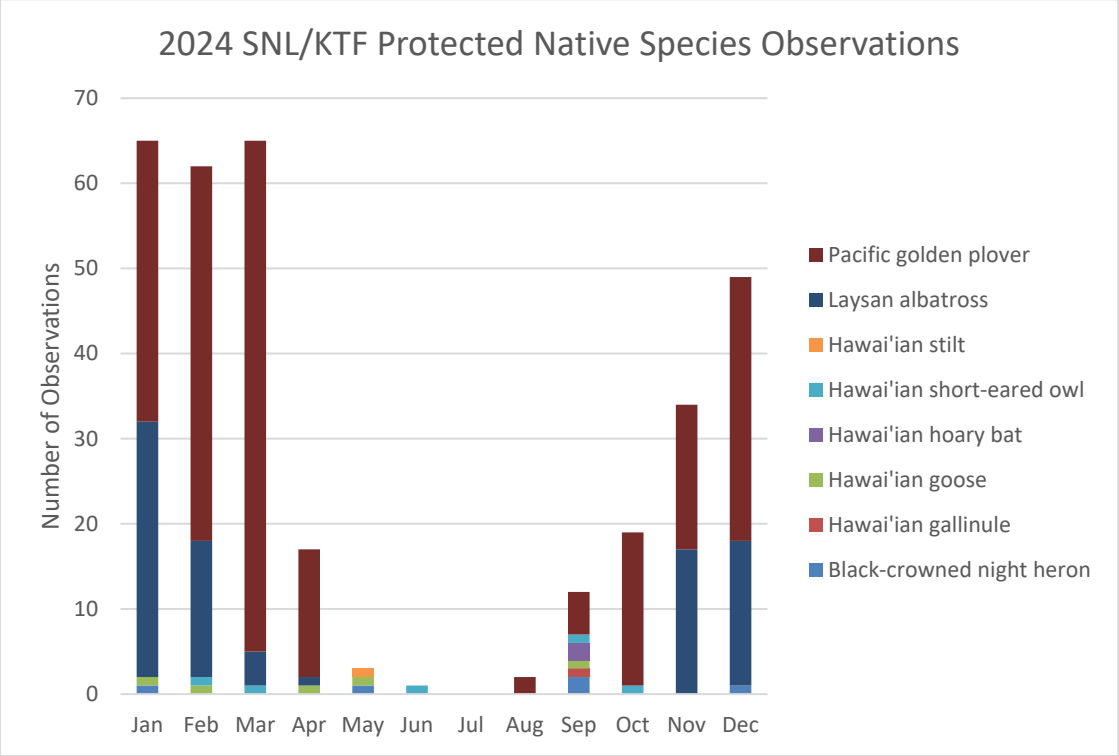

Figure 3-2. Totals of protected native species observations by month in 2024

Hawai‘ian Hoary Bat

Passive acoustic surveys rely on sound recording devices to monitor wildlife in areas of interest. Specifically, the ultrasonic microphones of passive acoustic bat detectors record the calls of nearby echolocating bats. Two passive acoustic recording devices were installed at two locations in 2023 to increase understanding of Hawai'ian hoary bat year-round use of the site. Data are collected year-round and routinely analyzed. New findings related to Hawai'ian hoary bats are communicated to USFWS and Pacific Missile Range Facility Natural Resources staff.

Due to equipment malfunctions and data transfer issues, there were several data gaps for acoustic data in 2024. SNL/NM biologists coordinated with sub-contracted biologists and site environmental support to troubleshoot the issue.

In late September 2024, two Hawai'ian hoary bat observations were recorded at SNL/KTF during a nocturnal lighting compliance survey. The observations were made using night vision binoculars and were the first visual observations of Hawai'ian hoary bats since sub-contracted biological survey support was initiated in 2022. The bats were observed flying over launch field buildings. Bats may sporadically traverse the SNL/KTF but are not anticipated to routinely use the area due to lack of suitable habitat. Site use by this protected endemic bat species will continue to be monitored for any significant changes.

Hawai‘ian Goose

Hawai‘ian goose observations are documented by subcontracted biologists during routine and nonroutine compliance support activities. Hawai‘ian geese were observed infrequently throughout the year. Twenty Hawai'ian geese were recorded by sub-contracted biologists during site surveys in 2024. However, only 13 were observed within KTF property, 11 of which were solely transiting over the site. The remaining seven observations were of Hawai'ian geese on adjacent Pacific Missile Range Facility property. No nesting attempts were documented at SNL/KTF in 2024.

Band-Rumped Storm Petrel, Hawai‘ian Petrel, and Newell's Shearwater

Subcontracted biologists conducted quarterly patrols to evaluate shielding requirements for exposed lights to help prevent seabird disorientation. In addition, it was confirmed that nighttime operations adhered to prescribed biological mitigations during the Dark Skies period from September 15 to December 15, 2024. No fallout was reported at SNL/KTF in 2024.

Laysan Albatross

Laysan albatross observations are documented by subcontracted biologists during routine and nonroutine compliance-support activities. Laysan albatrosses were observed during most of the year, except from August to October, which is when they are out at sea. Sightings of Laysan albatrosses are significant because the species is currently classified as "near threatened" by the International Union for Conservation of Nature, and ongoing monitoring provides useful local population information.

From November to December 2024, biologists located five Laysan albatross nests (Figure 3-3) around SNL/KTF; each nest contained one egg. Active nest buffers were established, and Ecology Program personnel coordinated with Pacific Missile Range Facility Natural Resources and U.S. Department of Agriculture Wildlife Services personnel to implement appropriate management actions. This is the second year in a row that five nesting attempts were documented in and around SNL/KTF.

Figure 3-3. Adult Laysan albatross incubating an egg on December 4, 2024

The U.S. Navy's Bird/Wildlife Aircraft Strike Hazard program addresses wildlife hazards at the Pacific Missile Range Facility, and the commanding officer maintains a Migratory Bird Treaty Act Permit for Pacific Missile Range Facility Barking Sands. Personnel at SNL/KTF cooperate with personnel at Pacific Missile Range Facility Natural Resources for all Bird/Wildlife Aircraft Strike Hazard management activities. The five eggs were collected and relocated off-site to be reared by foster parents under the Navy's Migratory Bird Treaty Act Permit. The eggs were moved away from U.S. Navy airstrips to alleviate wildlife hazards while promoting the persistence of native wildlife.

Pacific Golden Plover

Unlike the Hawai'ian goose and Laysan albatross, Pacific golden plovers are primarily present on Kaua'i seasonally. Most Pacific golden plovers return to SNL/KTF in winter months from arctic tundra breeding locations. This species was observed on-site during the non-breeding months, with the largest number of observations in late fall and early winter. Pacific golden plovers are the most observed native bird species on-site. No mitigation measures were necessary to protect Pacific golden plovers in 2024.

House Finch

As an introduced species, House Finch observations are not routinely documented during site surveys. However, active House Finch nests are managed in accordance with their protected status under the Migratory Bird Treaty Act.

During an environmental site survey, an active House Finch nest containing four eggs was located next to the ground level doorway of the Pad 42 launch tower. An active nest buffer was established while the Sandia Ecology Program coordinated with Pacific Missile Range Facility Natural Resources and site personnel on the appropriate path forward. It was determined that the use of a Pacific Missile Range Facility migratory bird permit was appropriate, and the nest was removed. The nest platform was then modified to prevent future nesting attempts.

Mission Support Building Consultation

New construction has the potential to impact wildlife adversely through direct harm, habitat loss, and/or disturbance. In accordance with Section 7 of the Endangered Species Act, an informal biological consultation was completed for the proposed construction of a Mission Support Building in December of 2024. The Mission Support Building would replace the current administrative facility structures.

Species considered included the Hawai'ian common gallinule, Hawai'ian coot, Hawai'ian duck, Hawai'ian goose, Hawai'ian hoary bat, Hawai'ian petrel, Newell's shearwater, and Hawai'ian stilt along with the Hawai'i Distinct Population Segment of the band-rumped storm petrel. Based on project activities and the implementation of proposed mitigation measures to protect Endangered Species Act-protected species during construction and operation of the Mission Support Building, the USFWS concurred with the DOE/NNSA conclusion that proposed actions "may affect" but are "not likely to adversely affect" Endangered Species Act protected species potentially present in the action area. Critical habitats are not present in the action area and there is no plausible route of effects to nearby unoccupied critical habitat.

Environmental Impact Monitoring

Environmental monitoring—the process for collecting data on environmental conditions to assess the impacts of an action—is a key component in assuring environmental compliance. Environmental monitoring and analysis findings provide information that can be used to mitigate adverse environmental impacts and help Sandia personnel and DOE/NNSA maintain compliance with regulatory agencies.

Terrestrial launch activities are the most acutely substantial activity performed at SNL/KTF. Previous environmental impact monitoring/modeling and analyses have been completed for rocket launches at KTF and are captured in the 2019 *Site-Wide Environmental Assessment, Sandia National Laboratories, Kaua'i Test Facility* (DOE/NNSA 2019). However, in some instances, the monitoring and analyses included for certain launch side effects are over 30 years old. More current launch environmental impact analysis packages exist; however, they were conducted at different sites and for slightly different launch configurations. To evaluate protected species compliance, DOE/NNSA requested Sandia personnel to collect impact data from future terrestrial launch activities to the extent permitted.

A Sandia biologist partnered with Sandia sensor subject matter experts to explore using in-house capabilities to monitor the environmental side effects of terrestrial rocket launch operations at SNL/KTF. It was determined that heat, vibration, noise, and overpressure were relevant physical phenomena that could be monitored during a rocket launch at the facility and then analyzed for impacts using Sandia equipment and expertise.

Multiple sensor types were chosen for environmental impact monitoring at SNL/KTF: thermocouples, heat flux gauges, seismometers, microphones, pressure sensors, and accelerometers. Sensors were deployed at three radial distances from a rocket-launching source along two axes at SNL/KTF. These sensors collected data on a terrestrial launch event in 2024.

The calendar year 2024 monitoring findings validated findings from previous analyses of similar launch configurations and provided finer resolution data. No ecological compliance gaps were identified from the 2024 terrestrial launch monitoring findings. Results from the 2024 terrestrial launch environmental monitoring at SNL/KTF will inform future environmental reviews and compliance actions.

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Chapter 4. Other Environmental Programs

Kaua'i Nāpali coast

OVERVIEW ▪ Sandia personnel take the responsibility of protecting the environment seriously. Numerous program teams monitor the environment and perform activities at SNL/KTF to help prevent pollution and conserve natural resources.

Sandia personnel providing services at SNL/KTF take the responsibility of protecting the environment seriously. Personnel demonstrate this responsibility every day by striving to minimize the adverse environmental impacts of the work done. Environmental Program subject matter experts are responsible for knowing and understanding federal, state, and local requirements for their programs. Presidential executive orders and DOE guidance documents are also used to establish program criteria.

4.1 National Environmental Policy Act Program

NEPA Program personnel provide technical assistance to ensure that Sandia operations and activities are reviewed for NEPA compliance at all Sandia sites, including SNL/NM, SNL/KTF, Sandia California, the Tonopah Test Range in Nevada, and other remote locations. For all federally proposed projects and activities, project owners must complete an online NEPA checklist using the internal NEPA Module application. A NEPA checklist is an internal form that NEPA Program personnel use to review proposed projects and activities for compliance with NEPA.

As part of a NEPA checklist review, NEPA Program personnel verify whether proposed projects and activities and their environmental impacts have been evaluated in existing NEPA documentation. In addition, other relevant environmental program subject matter

experts review proposed projects and activities to identify any applicable environmental permitting and other requirements for the proposed work and then communicate this information to project managers. Project managers are required to ensure that all environmental requirements are met.

A NEPA checklist is forwarded to the DOE/NNSA NEPA Compliance Officer for review and determination when a proposed project or activity reflects any of the following:

- The proposed project or activity is not covered by existing NEPA documentation.
- The proposed project or activity is outside the scope of an existing land-use permit.
- The proposed project or activity is at a location that is not owned by DOE/NNSA or permitted to Sandia.

DOE/NNSA will review the NEPA checklist and make a NEPA determination. Projects or activities that have not been reviewed in existing NEPA documents or do not qualify for a categorical exclusion from NEPA requirements per 10 CFR 1021, *National Environmental Policy Act Implementing Procedures* (10 CFR 1021), require new or additional NEPA analyses, which may result in the need for a new environmental assessment, a new environmental impact statement, or documentation to supplement an existing environmental impact statement or environmental assessment.

DOE/EA-2089, *Site-Wide Environmental Assessment, Sandia National Laboratories, Kaua'i Test Facility* (DOE/NNSA 2019), evaluated the impacts of Sandia operations for continued operations at SNL/KTF.

—Program Activities and Results 2024: National Environmental Policy Act

NEPA activities and results for 2024 are presented in the following sections.

NEPA Compliance

In calendar year 2024, NEPA Program personnel continued to participate in process improvement activities with DOE/NNSA Sandia Field Office personnel, resulting in alignment between the two on terminology, roles, and responsibilities, and both short- and long-term process improvements.

In addition to reviewing checklists, NEPA Program personnel improved the Environmental Program's outreach and support to the KTF site, resulting in enhanced project planning by tracking long-lead requirements, as well as verifying that all requirements were met before beginning work. NEPA personnel continue to support plans for the construction of a missionsupport- Building to replace the current administrative facilities and the negotiation of a land-use permit with the Navy. In 2024, the DOE/NNSA land use agreement between DOE/NNSA and the U.S. Navy was signed.

NEPA Checklist Reviews

In 2024, NEPA Program personnel reviewed four NEPA checklists for ongoing activities at SNL/KTF, including an annual launch and operations checklist for the site. Two of the checklists reviewed were determined to describe activities and operations that had been analyzed in a previously published NEPA document (Table 4-1). Two of the checklists reviewed included activities and/or operations that had not been previously analyzed in

existing NEPA documents, so they were sent to the DOE/NNSA Sandia Field Office for review and determination. The determination made by the NEPA compliance officer at the Sandia Field Office cited multiple categorical exclusions (Table 4-2).

Table 4-1. NEPA checklists reviewed in 2024 for projects and activities described in existing NEPA documentation

NEPA Document Title	Documents Cited in Sandia Determinations	Number of Citations
Continued Operations of the Kaua'i Test Facility, Sandia National Laboratories, Hawaii (2019)	EA DOE/EA-2089	2

Table 4-2. Categorical exclusions cited by DOE/NNSA NEPA compliance officer in DOE/NNSA determinations for activities at KTF in 2024

Categorical Exclusions Cited	Number of Citations
B1.3 Routine maintenance	1
B1.11 Fencing	1
B1.13 Pathways, short access roads, and rail lines	1
B1.15 Support buildings	1
B1.23 Demolition and disposal of buildings	1
B1.24 Property transfers	1
B1.25 Real property transfers for cultural resources protection, habitat preservation, and wildlife management	1
B1.33 Stormwater runoff control	1
B4.7 Fiber optic cable	1
B4.12 Construction of powerlines	1
B5.1 Actions to conserve energy or water	1
B5.5 Short pipeline segments	1

Note: Some determinations cited multiple categorical exclusions to cover all activities.

4.2 Chemical Information System

The Chemical Information System is a comprehensive chemical information tool used across all Sandia sites 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 (EPCRA). The Chemical Information System compiles information concerning chemical hazards and appropriate protective measures for Emergency Management Operations, other ES&H programs, and the workforce.

SNL/KTF uses the Chemical Information System to track and manage chemicals, which 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 130,000 safety data sheets in its library for use by any Sandia site. This electronic inventory helps chemical users and their managers assess and manage workplace hazards. Easy access to this inventory facilitates availability searches. It also improves the ability to share chemicals and thus reduces sources, which minimizes chemical purchases and waste disposal expenses.

Personnel use a pre-procurement module, ChemPro, to request permission for new chemical purchases. The system runs a series of queries, comparing the requested purchasing information to regulatory limits, and determines whether the requested chemical and quantity is approved for use and storage in the specified location. If approved, the requestor receives a chemical approval number, which they must provide to the chemical vendor as part of the purchasing process. ChemPro allows for proactive ES&H planning.

4.3 Waste Management Program

Operations at SNL/KTF generate common office and household solid waste, and the site is classified as a very small quantity generator of hazardous waste. Personnel follow applicable requirements for solid waste and hazardous waste. U.S. Environmental Protection Agency (EPA) Region 9 and the Hawai'i State Department of Health issued a hazardous waste generator identification (HI-0000-363309) to Sandia on September 23, 1994.

At SNL/KTF, compliance with the Toxic Substances Control Act involves management of polychlorinated biphenyls (PCBs) and asbestos. The electrical transformers at SNL/KTF have been tested and are free of PCBs. Asbestos abatement-related activities are conducted in accordance with applicable regulatory requirements as needed. The SNL/NM asbestos management team conducted a comprehensive asbestos survey in July 2008 and identified 110 cubic yards of asbestos-containing materials at SNL/KTF.

4.3.1 Department of Energy Consolidated Audit Program

The DOE Consolidated Audit Program (DOECAP) seeks to reduce DOE's environmental program management risk and assist DOE Program Offices and contractors by conducting audits and assessments that are designed to assure commercial environmental analytical laboratories and treatment, storage, and disposal facilities (TSDFs) that DOE entities use are operating in compliance with applicable federal, state, and local environmental, safety and health and transportation regulations.

4.3.1.1 DOECAP Treatment, Storage, and Disposal Facility Audits

SNL/KTF personnel send waste off-site for treatment and disposal to contracted off-site commercial waste vendor facilities. The DOECAP program performs annual audits of TSDFs. The following list identifies recycling facilities and TSDFs that SNL/KTF used in 2024:

- Garden Isle Disposal
  2666 Niumalu Rd
  Lihue, HI 96766
- Puhi Metals
  3951 Puhi Rd
  Lihue, HI 96766
- Reynolds Recycling
  3460 Ahukini Rd
  Lihue, HI 96796
- Unitek Solvent Services
  1811 Leleiona St
  Lihue, HI 96766
- PS&D Tires
  4428 Kukui Grove St
  Lihue, HI 96766
- Hopaco Office Max
  3145 Oihana St
  Lihue, HI 96766
- Kauai Resource Center
  3460 Ahukini Rd
  Lihue, HI 96766
- PCCC
  1543 Haleukana St
  Lihue, HI 96766

- NAPA Auto Parts #2
  3495 Kaumuali"I Hwy
  Kaleheo, HI 96741
- Enviro Services
  505 Ward Ave. #202
  Honolulu, HI 96814

DOECAP TSDF Audit Program personnel conduct audits of commercial TSDFs while representing the DOE complex to evaluate the audited facility's ability to treat, store, and dispose of DOE waste in a manner that is protective of human health and the environment. The audits assess the management systems and operational activities to verify the facility's ability to meet the applicable requirements for storing, handling, transporting, processing, and final disposition of DOE waste and material. None of the TSDFs listed above were subject to DOECAP auditing in 2024.

—Program Activities and Results 2024: Waste Management

Some hazardous waste was generated through normal operations at SNL/KTF in 2024. No asbestos-containing materials were removed in 2024. The contracted off-site commercial waste vendor facilities that SNL/KTF personnel used in 2024 are listed in Section 4.3.1.1 along with any associated audit information for those facilities.

4.4 Air Quality Compliance Program

There are two diesel-fired power generators at SNL/KTF that are permitted for operation by the State of Hawai'i under the Noncovered Source Permit (Hawaii DLNR 2015). According to Hawai'i Administrative Rules, a noncovered source is a stationary source that is not considered a major source of air pollutants. These generators are subject to the provisions of the following federal regulations (the specific requirements of these standards are detailed in special conditions within the permit):

- 40 CFR 60, Standards of Performance for New Stationary Sources, Subpart A, "General Provisions" (10 CFR 60 2016)
- 40 CFR 60, Standards of Performance for New Stationary Sources, Subpart IIII, "Standards of Performance for Stationary Compression Ignition Internal Combustion Engines"

Rocket launch emissions are included in the review against Toxic Release Inventory reporting thresholds and are reported as applicable.

—Program Activities and Results 2024: Air Quality

Sandia submitted the 2024 Annual Emissions Report, two semiannual monitoring reports, and the annual fee to the State of Hawai'i (Sandia 2025) as required by the Noncovered Source Permit. The highest total combined operating hours for the generators for a rolling 12-month period was 394 hours, which occurred from October 2023 to September 2024. All operations at SNL/KTF complied with permitted operating limits and conditions.

4.5 Meteorology Program

Sandia personnel operate on-site meteorological instruments at SNL/KTF during test periods to characterize ground-level and atmospheric wind conditions. These instruments include 10-meter sensing towers, radiosondes, and tether sondes. The meteorological parameters measured would be specific to the test; temperature, wind speed and direction,

barometric pressure, humidity, and precipitation are commonly measured. In addition, climatic information, representative of SNL/KTF, is obtained from Pacific Missile Range Facility personnel, and Pacific Missile Range Facility Emergency Operations Center personnel automatically issue severe weather notifications to all resident personnel.

4.6 Oil Storage Program

Oil Storage Program personnel support regulatory compliance associated with the management, operation, and maintenance of oil storage containers and equipment at SNL/KTF. Aboveground oil storage containers at SNL/KTF operate under the *Pacific Missile Range Facility Spill Prevention, Control, and Countermeasure* Plan (U.S. Navy 2023) as required by 40 CFR 112, *Oil Pollution Prevention.* The *Pacific Missile Range Facility Spill Prevention, Control, and Countermeasure Plan* describes the oil storage facilities at SNL/KTF and the mitigation controls in place to prevent inadvertent discharges of oil.

The inventory of aboveground oil storage containers and equipment at SNL/KTF operating under the Pacific Missile Range Facility Spill Prevention, Control, and Countermeasure Plan include the following:

- One portable diesel fuel generator base tank (192 gallons)
- One stationary aboveground diesel fuel storage tank (10,000 gallons)
- Two stationary diesel fuel generator base tanks (300 gallons each)
- Four 55-gallon drums for collecting and storing used oil
- Five in-service oil-filled electrical transformers (approximately 900 gallons)
- Two vehicles equipped with onboard hydraulic oil systems (approximately 130 gallons)

In addition to aboveground oil storage containers at SNL/KTF, a single underground gasoline storage tank (2,500 gallons) is maintained on-site and is subject to regulation under the Hawai'i Administrative Rules, Title 11, Chapter 280.1, *Underground Storage Tanks* (HAR-11.280.1 2021). The underground storage tank is permitted with the Hawai'i State Department of Health. The tank is equipped with leak detection system equipment that is inspected and functionally tested annually in accordance with HAR-11.280.1 requirements.

—Program Activities and Results 2024: Oil Storage

In 2024, personnel performed the required annual inspection and testing of the underground storage tank monitoring system and identified no issues or concerns. Throughout 2024, routine visual inspections were performed on aboveground oil storage containers monthly and annually. Vehicle-equipped onboard hydraulic systems are inspected as part of manufacturers recommended preventive maintenance.

4.7 Terrestrial Surveillance Program

The Terrestrial Surveillance Program is designed to address DOE O 458.1 Admin Change 4 (Ltd Chg), *Radiation Protection of the Public and the Environment* (DOE O 458.1 Chg 4 (LtdChg) 2020), which establishes standards and requirements to protect the public and the environment from undue risk from radiation associated with radiological activities under DOE control. Terrestrial Surveillance Program personnel collect environmental media (soil)

samples at SNL/KTF approximately every 5 years. Operations at SNL/KTF do not (currently or in the past) involve radioactive materials. Therefore, radiological constituents are not analyzed. As a best management practice, soil samples are analyzed for metals at site-specific locations. Sampling began at SNL/KTF in 1994 and continued in 1999, 2002, 2007, 2012, 2018, and 2022. Sampling activities were not conducted in 2024. Details of the Terrestrial Surveillance Program and previous sampling results can be found in earlier ASERs.

4.8 Environmental Release, Response, and Reporting Team

Environmental Release, Response, and Reporting Program personnel at Sandia are contacted in the event of any spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of material into the environment, which may include (but is not limited to) soil, water, air, and drain systems. A set of procedures provides specific instructions for reporting an environmental release and for developing an accurate report. Environmental Release, Response, and Reporting Program personnel implement the procedures for and document all aspects of an environmental release and report on chemical use to ensure compliance with federal, state, and local reporting requirements.

—Program Activities and Results 2024: Environmental Release, Response, and Reporting Team

Environmental Release, Response, and Reporting team activities and results are presented in the following sections.

Events Reported to the Hawai'i Environment Department

In 2024, no releases occurred that required reporting to the Hawai'i Hazard Evaluation and Emergency Response Office.

Events Categorized as a DOE Reportable Occurrence

In 2024, no releases to the environment were reported to outside agencies that met the criteria for DOE-reportable occurrences under DOE O 232.2A, Chg 1 (MinChg), *Occurrence Reporting and Processing of Operations Information* (DOE O 232.2A, Chg 1 (MinChg) 2017).

4.9 Water Quality Programs

Water quality-related programs at SNL/KTF ensure compliance with local, state, and federal requirements. There are no drinking water or groundwater monitoring wells at SNL/KTF. All drinking water at SNL/KTF is supplied by the Pacific Missile Range Facility public water system.

4.9.1 Stormwater Program

Stormwater runoff at SNL/KTF is directed away from the developed and hardscaped portion of the site through four drains that discharge to ground surface within a grass field. Given sufficient rainfall, stormwater could flow overland to the west from the drains, but there are no discernible ditches or other conveyance features either within or leaving the site.

It is thought that the vast majority, if not all, stormwater spreads and infiltrates within the site boundaries. Stormwater permits, inspections, and sampling are not required for normal operations.

—Program Activities and Results 2024: Stormwater Program

New construction activities that exceed 1 acre of soil disturbance require permitting under the Construction General Permit. No construction activities required permit coverage during 2024.

4.9.2 Wastewater Discharge Program

Activities at SNL/KTF produce only sanitary sewage, which is directed into three DOE/NNSA-owned and state-registered septic tanks, which are all currently in use and do not impact any protected waters. The first septic tank was built in 1965 and was replaced in 2004. Two additional septic tanks were built in 1990 to serve other areas. The septic tank systems are pumped periodically and are inspected by licensed, state-certified contractors.

Wastewater is the spent or used water from a home, community, farm, or industry that contains dissolved or suspended matter. Suspended matter refers to particles within a fluid that are not dissolved but are freely floating or dispersed throughout the fluid.

—Program Activities and Results 2024: Wastewater Discharge

During 2024, all the septic tank systems were either inspected or pumped. There were no wastewater sampling events in 2024.

4.10 Wildland Fire Management Program

SNL/KTF objectives for wildland fire management include restoring and preserving landscapes, fostering a fire-adapted community, and ensuring effective execution of wildland fire mitigation strategies. Because SNL/KTF exists on U.S. Navy permitted land, the Navy is responsible for all wildland fire protection, wildland fire planning, and wildland fire response. Personnel at SNL/KTF implement recommendations made by the Navy's fire department and generally prepare for wildland fires through the following efforts:

- Coordinating with our partners to ensure wildland fire hazards are known
- Removing/thinning dangerous fuel sources by trimming trees, keeping the launch field grass low, and watering the areas around launch pads for several days before a launch
- Maintaining well-defined evacuation routes
- Maintaining defensible spaces

Chapter 5. Compliance Summary and Environmental Permits

Kaua'i fishing boat at sunset

OVERVIEW ▪ Sandia personnel are required to comply with federal, state, and local environmental statutes, regulations, executive orders, and DOE directives. Regular audits, appraisals, and inspections identify areas for improvement as well as noteworthy practices.

Sandia personnel are required to comply with federal, state, and local environmental requirements, including DOE directives and presidential executive orders. As part of this compliance, personnel adhere to strict reporting and permitting requirements.

All operations and activities, including those that are part of environmental programs, are performed in accordance with the ES&H policy, which includes the following statement:

> Sandia integrates environment, safety, and health throughout the lifecycle of its operations to ensure the:
> - Protection of Members of the Workforce by providing a safe and healthful workplace
> - Protection of the environment by preventing or minimizing pollution and waste, pursuing sustainable resource use, and protecting biodiversity and ecosystems
> - Protection of the public through the prevention or minimization of releases of hazardous materials
> - Compliance with applicable ES&H requirements, including contractual requirements
> - Establishment, measurement, and monitoring of ES&H objectives to enhance performance and drive continual improvement

An integrated safety management system incorporates safety into management and work practices at all levels so that missions are accomplished while protecting the worker, the public, and the environment. Thus, management of safety functions becomes an integral part of mission accomplishment and meets requirements outlined by DOE. The following five core functions guide the integration of safety into all work practices: define the scope of work, analyze the hazards, develop and implement hazard controls, perform work within controls, and provide feedback and continuous improvement.

The integrated safety management system incorporates the Environmental Management System, which is described below in Section 5.1.1 under the associated federal requirement. Additionally, the Environmental Management System is described in detail in Section 5.2

5.1 Environmental Compliance

The management and operating contract, also referred to as the Prime Contract, for Sandia serves as the overarching agreement between the DOE/NNSA and the management and operating contractor. The Prime Contract requires the management and operating contractor to comply with specific DOE directives as well as applicable federal, state, and local requirements for the management and operation of Sandia.

5.1.1 Federal Requirements

The Prime Contract requires compliance with federal requirements, including applicable federal laws and regulations as well as specific DOE directives. The significant federal requirements that pertain to environmental protection and management and were in effect at Sandia in 2024 are presented below along with the compliance approach and compliance activities in the calendar year.

5.1.1.1 Environmental Planning

Environmental planning requirements and compliance activities are listed in Table 5-1.

Table 5-1. Environmental planning requirements and compliance activities

Requirements	Compliance Activities
National Environmental Policy Act of 1969	
The National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. § 4321 et seq. 1969) is a law that requires federal agencies to assess the impacts of proposed actions on the human and natural environment prior to making decisions. The Council on Environmental Quality is the agency responsible for implementing NEPA through issuing guidance. DOE codified its NEPA implementing procedures in 10 CFR 1021, *National Environmental Policy Act* (10 CFR 1021 2011). Personnel use the NEPA module (an online tool that uses a checklist format) to document proposed actions and activities and assess them for potential environmental consequences and impacts. When projects or activities appear to be outside the scope of existing NEPA documentation, a NEPA checklist is prepared and forwarded to DOE/NNSA for review and determination. Section 4.1 provides information on NEPA activities in 2024.	• Ensure that potential environmental impacts have been assessed adequately • Verify NEPA Coverage • Coordinate NEPA assessments with DOE personnel • Inform project owners of environmental requirements

5.1.1.2 Site Sustainability

Site sustainability requirements and compliance activities are listed in Table 5-2.

Table 5-2. Site sustainability requirements and compliance activities

Requirements	Compliance Activities
Energy Independence and Security Act of 2007, Section 527	
The Energy Independence and Security Act (EISA) of 2007 (42 U.S.C. § 17001 2007), Section 527, requires federal agencies to submit to the Office of Management and Budget an annual government efficiency status report on compliance with the implementation of initiatives to improve energy efficiency, reduce energy costs, lower greenhouse gas emissions, and savings to U.S. taxpayers resulting from mandated improvements. The DOE Sustainability Performance Office uses data from the Sandia's Site Sustainability Plan to produce the DOE's Annual Energy Management Report.	• Establish and implement an annual site sustainability plan for Sandia locations, including SNL/KTF
Disaster Resiliency Planning Act of 2022	
Under the Disaster Resiliency Act **Invalid source specified.**, each agency head is required to incorporate natural disaster resilience into real property asset management and investment decisions made by the agency.	• Establish and implement a vulnerability assessment and resilience plan to meet this requirement

5.1.1.3 Hazardous Waste and Inactive Remediation Sites

Hazardous waste and inactive remediation site requirements and compliance activities are presented in Table 5-3.

Table 5-3. Hazardous waste and inactive remediation site requirements and compliance activities

Requirements	Compliance Activities
Comprehensive Environmental Response, Compensation, and Liability Act of 1980, and amended in 1986	
The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. § 9601 1980), and amended in 1986, establishes liability compensation, cleanup, and emergency response requirements for inactive hazardous waste sites. In addition, the act requires federal facilities to report hazardous substance spills to the National Response Center and perform any necessary response action. The EPA recommended continued reevaluation for environmental contamination at SNL/KTF due to ongoing activities at the launch facility there (EPA 1996). The Superfund Amendments and Reauthorization Act Title III of 1986 (42 U.S.C. § 9601 1986) establishes additional reporting requirements that are addressed in Chemical Management.	• Sites where releases were identified have been investigated and closed through the regulatory process • See Chemical Management for compliance activities
Federal Facility Compliance Act of 1992	
The Federal Facility Compliance Act of 1992 (42 U.S.C. § 6961 1992) requires federal facilities to comply with all federal, state, and local requirements for hazardous and solid waste, including full compliance with the restrictions and prohibitions on extended storage of mixed wastes that do not meet the applicable hazardous waste treatment standards. Operations at SNL/KTF do not generate mixed waste, and no mixed waste is currently stored on-site.	• No activities are associated with this requirement

Requirements	Compliance Activities
Resource Conservation and Recovery Act, enacted in 1976, as amended	
The Resource Conservation and Recovery Act (RCRA), enacted in 1976 (42 U.S.C. § 6901 et seq. 1976), as amended, sets forth the framework for managing nonhazardous and hazardous solid waste, including the hazardous waste component of mixed waste. Operations at SNL/KTF generate less than 100 kg of hazardous waste through normal operations each month, which equates to very-small-quantity generator status. Section 4.3 provides information on waste management.	• Adhere to the manifest and pre-transport requirements in 40 CFR 262, *Standards Applicable to Generators of Hazardous Waste* (40 CFR 262 2021), as incorporated and amended in the Hawai'i Administrative Rules, Title 11, Section 262-1, "Hazardous Waste Management" (HAR-11-262.1 2017) • Minimize waste via recycling and material recovery • Collect and screen material and waste in preparation for shipment to off-site facilities for recycling, storage, treatment, or disposal

5.1.1.4 Radiation Protection

Radiation protection requirements and compliance activities are listed in Table 5-4.

Table 5-4. Radiation protection requirements and compliance activities

Requirements	Compliance Activities
Atomic Energy Act of 1954	
The Atomic Energy Act of 1954 (42 U.S.C. § 2011 1954) specifies proper management of source, special nuclear, and byproduct material DOE has the authority to manage operations based on applicable statutes, federal regulations, and DOE directives. Operations at SNL/KTF do not (currently or in the past) involve radioactive materials (Section 1.5 and Section 4.7).	• No activities are associated with this requirement
DOE O 458.1 Chg 4 (LtdChg), Radiation Protection of the Public and the Environment	
DOE O 458.1, *Radiation Protection of the Public and the Environment* (DOE O 458.1 Chg 4 (LtdChg) 2020), establishes requirements to protect the public from undue radiation exposure, demonstrate compliance with public dose limits from air pathways, control releases of radioactive discharges, control radioactive waste, protect drinking water and groundwater, protect biota, control the release of property with residual radioactivity, and manage radiation-related records. The Terrestrial Surveillance Program activities at SNL/KTF are conducted as a best management practice. The Terrestrial Surveillance Program is driven by DOE O 458.1, yet operations there do not involve radioactive materials (Section 1.5 and Section 4.7).	• Sample and analyze soil for metals as a best management practice

5.1.1.5 Air Quality

Air quality requirements and compliance activities are presented in Table 5-5.

Table 5-5. Air quality requirements and compliance activities

Requirements	Compliance Activities
Clean Air Act of 1970, as amended	
The Clean Air Act of 1970 (42 U.S.C. § 7401 1970), as amended, governs the management of non-radiological emissions with compliance achieved through adherence to the conditions of permits and applicable regulations. Section 4.4 provides information on air quality compliance.	• Confirm that planned stationary sources of air pollutants (e.g., equipment) and potential emission from operations meet applicable local and federal requirements • Maintain documentation that confirms that sources comply with regulations and/or permitted operating conditions • Submit monitoring reports, annual emissions inventories, and other compliance assurance documentation to regulatory agencies

5.1.1.6 Water Quality

Water quality requirements and compliance activities are listed in Table 5-6.

Table 5-6. Water quality requirements and compliance activities

Requirements	Compliance Activities
Clean Water Act of 1972 and amendments	
The Clean Water Act of 1972 (33 U.S.C. § 1251 1977) and amendments establishes a permitting structure and regulatory direction to protect the "waters of the United States" by restoring and maintaining the chemical, physical, and biological integrity of U.S. waters; protecting fish, wildlife, and recreation; and reducing pollutant discharges. There are no drinking water or groundwater monitoring wells at SNL/KTF. Sanitary sewer discharge is monitored at three on-site state-registered septic tanks. Stormwater permits, inspections, and sampling are not required for normal operations. However, new construction activities that exceed one acre of soil disturbance require permitting under the Construction General Permit, which is administered by the State of Hawai'i, Department of Health, Clean Water Branch. When needed, stormwater pollution prevention plans are developed and include control measures, site inspections, and annual reporting requirements. See Section 4.9 for more information on water quality programs.	• Monitor three state-registered septic tanks and perform periodic septic tank inspections • Pump septic tanks as needed • Gain and comply with a stormwater permit for new construction activities exceeding one acre of soil disturbance • Implement stormwater pollution prevention plans when needed to prevent unpermitted discharges, conduct inspections, and complete annual reporting requirements
Energy Independence and Security Act of 2007, Section 438	
The Energy Independence and Security Act (EISA) of 2007 (42 U.S.C. § 17001 2007), Section 438, requires federal agencies to manage stormwater runoff from federal development projects for the protection of water resources. Proposed projects planned are assessed for EISA § 438 applicability. Site planning, design, construction, and maintenance strategies are applied to maintain or restore predevelopment site hydrology. See Section 4.8 for more information on water quality programs.	• Identify projects that require EISA compliance • Obtain drainage plans and designs for EISA compliance from National Technology & Engineering Solutions of Sandia, LLC flood control engineer • Conduct inspections and maintain detention features

Requirements	Compliance Activities
Oil Pollution Act of 1990 (33 U.S.C. § 40 1990)	
Originally published in 1973 under the authority of §311 of the Clean Water Act, the Oil Pollution Prevention regulation sets forth requirements for prevention of, preparedness for, and response to oil discharges at specific facilities. In 1990, the Oil Pollution Act amended the Clean Water Act to require some oil storage facilities to implement additional measures. The Oil Pollution Prevention regulations are set forth in 40 CFR 112, *Oil Pollution Prevention* (40 CFR 112 2011). The Pacific Missile Range Facility has a spill prevention, control, and countermeasure plan (U.S. Navy 2023) in compliance with 40 CFR 112, *Oil Pollution Prevention* (40 CFR 112 2011). Sandia is covered under the Pacific Missile Range Facility spill prevention, control, and countermeasure plan for all applicable aboveground oil storage containers at SNL/KTF. Section 4.6 provides information on the Oil Storage Program.	• Coordinate and cooperate with the Pacific Missile Range Facility Spill Prevention, Control, and Countermeasure Plan, including reporting and responding to spills • Inspect aboveground oil storage containers routinely • Train oil-handling personnel routinely • Maintain an oil storage container inventory • Incorporate oil spill prevention requirements and practices into processes, procedures, and new container installations
Resource Conservation and Recovery Act, enacted in 1976, as amended	
RCRA, enacted in 1976 (42 U.S.C. § 6901 et seq. 1976), as amended, sets forth the framework for managing underground storage tanks to prevent leaks into the environment and contamination of groundwater. Underground storage tank requirements were added to RCRA as Subtitle I in 1984 and, since 2002, the EPA has authorized the State of Hawai'i, through the Hawai'i Department of Health, to administer and enforce a state approved- program in lieu of the federal program detailed in 40 CFR 280, *Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)* (40 CFR 280 2014). Personnel at SNL/KTF operate a single 2,500-gallon underground storage tank containing gasoline. Section 4.6 provides information on the Oil Storage Program.	• Adhere to the applicable requirements in the Hawai'i Administrative Rules, Title 11, Chapter 11-280.1 "Underground Storage Tanks" (HAR-11.280.1 2021) • Maintain permit conditions for operation of the underground storage tank system • Perform required inspections and testing of the underground storage tank system
Safe Drinking Water Act of 1974, as amended	
The Safe Drinking Water Act of 1974, as amended (42 U.S.C. § 300f 1974), was established to protect the quality of drinking water in the United States, focusing on all waters actually or potentially designed for drinking use, whether from aboveground or underground sources. All drinking water at SNL/KTF is supplied by the Pacific Missile Range Facility drinking water system or by a vendor.	• No activities are associated with this requirement
America's Water Infrastructure Act of 2018	
America's Water Infrastructure Act of 2018 (33 U.S.C. § 2201 2018) is intended to improve drinking water and water quality, deepens infrastructure investments, enhances public health and quality of life, increases jobs, and bolsters the economy. The act's provisions represent changes to the Safe Drinking Water Act. All drinking water at SNL/KTF is supplied by the Pacific Missile Range Facility drinking water system or by a vendor.	• No activities are associated with this requirement

5.1.1.7 Chemical Management

Chemical management requirements and compliance activities are presented in Table 5-7.

Table 5-7. Chemical management requirements and compliance activities

Requirements	Compliance Activities
Emergency Planning and Community Right-to-Know Act of 1986	
The EPCRA of 1986 (42 U.S.C. § 11001 et seq. 1986), also known as Title III of the Superfund Amendments and Reauthorization Act, requires reporting of toxic chemicals used and released by federal, state, and local governments and industry. Chemical hazard information is provided to the community for awareness and enhancement of emergency planning efforts. See **Table 5-14** for more details.	• Maintain and report on a chemical inventory • Report qualifying releases
Federal Insecticide, Fungicide, and Rodenticide Act, enacted in 1910 and amended in 1972	
The Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. § 136 1910), enacted in 1910 and amended in 1972, regulates the use of herbicides, rodenticides, and insecticides. EPA regulations and applicable label guidelines are followed.	• No activities are associated with this requirement
Toxic Substances Control Act, enacted in 1976 and later amended	
The Toxic Substances Control Act, enacted in 1976 and later amended (15 U.S.C. § 2601 et seq. 1976), regulates the manufacture, processing, distribution, use, and disposal of specific chemical substances and/or mixtures. Compliance with this act includes managing asbestos and PCBs. There are no transformers containing PCBs at SNL/KTF. Section4.3 provides information on asbestos management.	• Conduct asbestos abatement in accordance with applicable regulatory requirements

5.1.1.8 Pollution Prevention

Pollution prevention requirements and compliance activities are listed in Table 5-8.

Table 5-8. Pollution prevention requirements and compliance activities

Requirements	Compliance Activities
Pollution Prevention Act of 1990	
The Pollution Prevention Act of 1990 (42 U.S.C. § 133 1990) declares as national policy that pollution should be prevented or reduced at the source wherever feasible. Source reduction is defined as any practice that decreases the amount of any hazardous substance, pollutant, or contaminant from entering any waste stream or from being released into the environment prior to recycling, treatment, or disposal. A toxic chemical source reduction and recycling report is required for facilities that meet the reporting requirements under EPCRA, Section 313. See previous EPCRA discussion under Chemical Management.	• Conduct database queries for chemical purchases annually • Compare environmental releases with EPCRA reporting thresholds • Prepare annual reports and submit them to federal, state, and local regulatory agencies • Follow green purchasing practices

5.1.1.9 Natural Resources

Natural resources requirements and compliance activities are listed in Table 5-9.

Table 5-9. Natural resources requirements and compliance activities

Requirements	Compliance Activities
Endangered Species Act of 1973, amended in 1982	
The Endangered Species Act of 1973, amended in 1982 (16 U.S.C. § 1531 et seq. 1973), provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead federal agencies for implementing the act are the USFWS and the National Marine Fisheries Service. The USFWS maintains a worldwide list of endangered species; species include birds, insects, fish, reptiles, mammals, crustaceans, flowers, grasses, and trees. Chapter 3 provides more information on threatened and endangered species that may occur at SNL/KTF.	• Collect ecological data • Provide ecological surveillance for maintenance of regulatory compliance • Consultation with the USFWS as appropriate • Collaborate with the host facility regarding Endangered Species Act efforts
EO 11988 of 1977, Floodplain Management, as amended	
Executive Order, Floodplain Management, (EO 11988 1977), requires federal agencies to consider impacts associated with the occupancy and modification of floodplains; reduce the risk of flood loss; minimize the impact of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains.	• Review NEPA checklists to identify impacts on floodplains • Preserve and protect ecological resources
EO 11990 of 1977, Protection of Wetlands, as amended	
Executive Order 11990, Protection of Wetlands, as amended (EO 11990 1977), requires federal agencies to minimize the destruction, loss, or degradation of wetlands and preserve and enhance the natural and beneficial values of wetlands. Chapter 3 provides more information on the Ecology Program.	• Review NEPA checklists to identify impacts on wetlands • Preserve and protect ecological resources
EO 13112 of 1999, Invasive Species	
Executive Order 13112, Invasive Species (EO 13112 1999) called upon executive departments and agencies to take steps to prevent the introduction and spread of invasive species, and to support efforts to eradicate and control invasive species that are established. It also created a coordinating body—the Invasive Species Council, also referred to as the National Invasive Species Council—to oversee implementation of the order, encourage proactive planning and action, develop recommendations for international cooperation, and take other steps to improve the federal response to invasive species. Chapter 3 provides more information on the Ecology Program.	• Monitor biota • Collect ecological data • Produce mitigation strategies as necessary
EO 13751 of 2016, Safeguarding the Nation from the Impacts of Invasive Species	
Executive Order 13751, Safeguarding the Nation from the Impacts of Invasive Species (EO 13751 2016), amended Executive Order 13112 and directs actions to continue coordinated federal prevention and control efforts related to invasive species. Chapter 3 provides more information on the Ecology Program.	• Monitor biota • Collect ecological data • Produce mitigation strategies as necessary

Requirements	Compliance Activities
Fish and Wildlife Conservation Act and Lacey Act Amendments of 1981	
The Fish and Wildlife Conservation Act (16 U.S.C. § 49 1980), enacted in 1980, and the Lacey Act Amendments of 1981 (16 U.S.C. 3371-3378 1981) were established so that wildlife will receive equal consideration with other natural resources regarding maintenance of the ecosystem. Relevancy to an ecological program is stated in 16 USC 661, *Conservancy*, which states that the purpose as follows: "(1) to provide assistance to, and cooperate with, federal, state, and public or private agencies and organizations in the development, protection, rearing, and stocking of all species . . . (2) to make surveys and investigations of the wildlife of the public domain." Chapter 3 provides more information on the Ecology Program.	• Consider Fish and Wildlife Conservation Act compliance when evaluating NEPA checklists
Marine Mammal Protection Act of 1972	
The Marine Mammal Protection Act (16 U.S.C. 1361-1421h 1972) established, with limited exceptions, a moratorium on the "taking" of marine mammals in waters or on lands under U.S. jurisdiction. The act further regulates "takes" of marine mammals on the high seas by vessels or persons under U.S. jurisdiction. The term *take*, as defined in Section 3 of the act, means "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal." "Harassment" was further defined in the 1994 and 2004 amendments to the Marine Mammal Protection Act. The 1994 amendments provided two levels of harassment: Level A (potential injury) and Level B (potential disturbance). Chapter 3 provides more information on the Ecology Program.	• Consider Marine Mammal Protection Act compliance when evaluating NEPA checklists
Migratory Bird Treaty Act of 1918 (and amendments)	
The Migratory Bird Treaty Act of 1918 (16 U.S.C. § 703 et seq. 1918) implemented the 1916 convention for the protection of migratory birds. The original statute implemented the agreement between the United States and Great Britain (for Canada), and later amendments implemented treaties between the United States and Mexico, the United States and Japan, and the United States and Russia. The act prevents the taking, possession, killing, transportation, and importation of migratory birds or their eggs, parts, and nests. Chapter 3 provides more information on the Ecology Program.	• Collect ecological data • Provide ecological surveillance for maintenance of regulatory compliance • Consult with the USFWS as appropriate
EO 13186 of 2001, Responsibilities of Federal Agencies to Protect Migratory Birds	
Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (EO 13186 2001) directs Federal agencies to take certain actions to further implement the Migratory Bird Treaty Act and promote the conservation of migratory bird populations. The executive order 13186 outlines Federal agency responsibilities and establishes an interagency Council for the Conservation of Migratory Birds (Council) to oversee the implementation of the Order. It requires agencies to avoid or minimize the adverse impact of their actions on migratory birds and ensure that environmental analyses under the National Environmental Policy Act evaluates the effects of proposed Federal actions on such species. Chapter 3provides more information on the Ecology Program.	• Collect ecological data. • Provide ecological surveillance for maintenance of regulatory compliance. • Consider migratory birds when evaluating NEPA documents
Sikes Act of 1960 (PL 86-97), enacted in 1960, and the amendments of 1986 (PL 99-561) and 1997 (PL 105-85 Title XXIX), reauthorized in 2013	
The Sikes Act, as amended (PL 105-85 1997), was reauthorized in 2013. The act protects and enhances fish, wildlife, and other natural resources that exist on and are associated with military lands in the United States. Chapter 3 provides more information on the Ecology Program.	• Consider the Sikes Act when evaluating NEPA checklists

5.1.1.10 Cultural Resources

Cultural resources requirements and compliance activities are listed in Table 5-10.

Table 5-10. Cultural resources requirements and compliance activities

Requirements	Compliance Activities
American Indian Religious Freedom Act, enacted in 1978 and amended in 1994	
The American Indian Religious Freedom Act of 1978, as amended in 1994 (PL 103-344 1994), a federal law and joint resolution of Congress, protects and preserves the traditional religious rights and cultural practices of American Indians, Eskimos, Aleuts, and native Hawai'ians. See Chapter 2 for information on the Cultural Resources Program.	• Conduct cultural resource surveys and monitor all construction activities • Prepare documentation to support planning activities and decisions • Review NEPA checklists to identify impacts on cultural resources • Support consultation with native Hawai'ians
Archaeological Resources Protection Act, enacted in 1979 and amended in 1988	
The Archaeological Resources Protection Act of 1979 (PL 96-95 1979) secures, for the present and future benefit of the American people, the protection of archaeological resources and sites that are on public lands and Indian lands and fosters increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals. Section 4 of the statute and sections 16.5–16.12 of the regulations describe the requirements that must be met before federal authorities can issue a permit to excavate or remove any archaeological resource on federal or Indian lands. The curation requirements of artifacts, other materials excavated or removed, and the records related to the artifacts and materials are described in Section 5 of the act. These regulations affect all federally owned or administered archaeological collections. See Chapter 2 for information on the Cultural Resources Program.	• Develop internal management plans • Conduct cultural resource surveys and monitor all construction activities • Prepare documentation to support planning activities and decisions • Review NEPA checklists to identify impacts on cultural resources
DOE O 144.1, Department of Energy American Indian Tribal Government Interactions and Policy	
DOE O 144.1, *Department of Energy American Indian Tribal Government Interactions and Policy* (DOE O 144.1 2009), sets forth the principles to be followed by DOE to ensure an effective implementation of government-to-government relationships with American Indian and Alaska Native tribal governments. This order provides direction to all DOE officials, staff, and contractors regarding fulfillment of trust obligations and other responsibilities arising from DOE actions that may potentially impact American Indian and Alaska Native traditional, cultural, and religious values and practices; natural resources; and treaty and other federally recognized and reserved rights. See Chapter 2 for information on the Cultural Resources Program.	• Develop internal management plans • Conduct cultural resource surveys and monitor all construction activities • Prepare documentation to support planning activities and decisions • Review NEPA checklists to identify impacts on cultural resources • Support consultation with native Hawai'ians
DOE O 430.1C, Real Property Asset Management	
DOE O 430.1C, *Real Property Asset Management* (DOE O 430.1C 2019), establishes an integrated corporate-level, performance-based approach to the life-cycle management of real property assets. It links real property asset planning, programming, budgeting, and evaluation to the multifaceted DOE missions. Successful implementation of this order will enable DOE to carry out stewardship responsibilities and will ensure that facilities and infrastructure are properly sized and in a condition to meet mission requirements today and in the future. See Chapter 2 for information on the Cultural Resources Program.	• Develop internal management plans • Conduct cultural resource surveys and monitor all construction activities • Survey property to determine eligibility for inclusion in the National Register of Historic Places

Requirements	Compliance Activities
	• Prepare documentation to support planning activities and decisions • Review NEPA checklists to identify impacts on cultural resources
DOE P 141.1, Management of Cultural Resources	
The purpose of DOE P 141.1, *Management of Cultural Resources* (DOE P 141.1 2011), is twofold: (1) to ensure that all DOE programs and field elements integrate cultural resources management into their missions and activities and (2) to raise the level of awareness and accountability among DOE contractors concerning the importance of DOE cultural resource-related legal and trust responsibilities. See Chapter 2 for information on the Cultural Resources Program.	• Develop internal management plans • Conduct cultural resource surveys and monitor all construction activities • Survey property to determine eligibility for inclusion in the National Register of Historic Places • Prepare documentation to support planning activities, decisions, and consultation • Review NEPA checklists to identify impacts on cultural resources
National Historic Preservation Act, enacted in 1966 and amended in 2000, Section 106	
The National Historic Preservation Act of 1966 (PL 89-665 1966), as amended and codified in 16 U.S.C., *Conservation* (16 U.S.C. 2016), is intended to preserve historical and archaeological sites in the United States. The act sets federal policy for preserving our nation's heritage by establishing a federal government and tribal government partnership, establishing the National Register of Historic Places and National Historic Landmarks Programs, mandating the selection of qualified State Historic Preservation Officers, establishing the Advisory Council on Historic Preservation, charging federal agencies with responsible stewardship, and establishing the role of certified local governments within the states. The National Register of Historic Places (36 CFR 60 2012) is authorized by the National Historic Preservation Act of 1966. It is the federal government's official list of districts, sites, buildings, structures, and objects deemed worthy of preservation for their historical significance at the national level. See Chapter 2 for information on the Cultural Resources Program.	• Develop internal management plans • Conduct cultural resource surveys to determine eligibility for inclusion in the National Register of Historic Places • Prepare documentation to support planning activities, decisions, and consultations • Review NEPA checklists to identify impacts on cultural resources • Monitor all construction activities for impacts on cultural resources
Native American Graves Protection and Repatriation Act, enacted in 1990	
The Native American Graves Protection and Repatriation Act (PL 101-601 1990) developed a systematic process for determining the rights of Indian tribe and Native Hawai'ian lineal descendants and their representative organizations to protect certain Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony with which they are affiliated. See Chapter 2 for information on the Cultural Resources Program.	• Develop internal management plans • Conduct cultural resource surveys and monitor all construction activities • Prepare documentation to support planning activities and decisions • Review NEPA checklists to identify impacts on cultural resources

5.1.1.11 Wildland Fire Management

Reporting requirements and compliance activities are presented in Table 5-11.

Table 5-11. Wildland Fire Management requirements and compliance activities

Requirements	Compliance Activities
DOE O 420.1C Chg3 (LtdChg), Facility Safety	
DOE O 420.1C Chg3 (LtdChg), *Facility Safety* (DOE O 420.1C Chg 3 (LtdChg) 2019), outlines DOE requirements for fire protection and wildland fire management. The order requires the development of an integrated site-wide wildland fire management plan, consistent with Federal Wildland Fire Management Policy. The plan must be submitted to the DOE Head of Field Element for approval and executed in accordance with the applicable sections of the NFPA 1143, *Standard for Wildland Fire Management*. Section 4.10 provides more information on the Wildland Fire Management Program.	• Maintain defensible space around its assets. Because SNL/KTF exists on U.S. Navy permitted land, the Navy is responsible for all wildland fire protection, wildland fire planning, and wildland fire response. • Implement Navy fire department recommendations.
EO 13728, Wildland-Urban Interface Federal Risk Mitigation	
EO 13728, Wildland-Urban Interface Federal Risk Mitigation (EO 13728 2016), outlines requirements for federal agencies concerning wildfire risk management for existing buildings over 5,000 gross square feet located in wildland-urban interface areas with moderate or greater fire hazard severity. Agencies are encouraged to comply with the International Wildland-Urban Interface Code or an equivalent code. The International Wildland-Urban Interface Code provides additional guidance on the necessary distance for defensible space around buildings in wildland-urban interface areas. Section 4.10 provides more information on the Wildland Fire Management Program.	• Wildfire risk assessments would be performed for buildings over 5,000 gross square feet located in wildland-urban interface areas with moderate or greater fire hazard severity to evaluate surrounding ignition hazards and create and maintain defensible spaces around buildings.

5.1.1.12 Reporting

Reporting requirements and compliance activities are listed in Table 5-12.

Table 5-12. Reporting requirements and compliance activities

Requirements	Compliance Activities
DOE O 231.1B, Admin Change 1, Environment, Safety and Health Reporting	
DOE O 231.1B, Admin Change 1, *Environment, Safety and Health Reporting* (DOE O 231.1B, Admin Change 1 2012), ensures that DOE receives information about events that have affected or could adversely affect the health, safety, and security of the public or workers, the environment, the operation of DOE facilities, or DOE credibility. It enhances mission safety and promotes the sharing of effective practices to support continuous improvement and adaptation to change.	• Produce an ASER • Report on environmental program activities, monitoring results, accidental releases, and waste management operations
DOE O 232.2A, Chg1 (MinChg) Occurrence Reporting and Processing of Operations Information	
DOE O 232.2A, Chg1 (MinChg), *Occurrence Reporting and Processing of Operations Information* (DOE O 232.2A, Chg 1 (MinChg) 2017), requires timely notification to DOE about events that could adversely affect the health and safety of the public or workers, the environment, DOE missions, or DOE credibility. Sandia personnel promote organizational learning through investigation and analysis of reported events and conditions that adversely affect or may adversely affect personnel, the public, property, the environment, or the DOE mission.	• Track all environmental events

5.1.1.13 Quality Assurance

Quality assurance requirements and compliance activities are listed in Table 5-13.

Table 5-13. Quality assurance requirements and compliance activities

Requirements	Compliance Activities
DOE O 414.1E, Quality Assurance	
DOE O 414.1E, *Quality Assurance* (DOE O 414.1E 2024), is intended to achieve quality in all work and ensure that products and services meet or exceed customer requirements and expectations. All environmental sampling and analyses at SNL/KTF conform to applicable quality assurance plans, sampling plans, and field operations.	• Develop quality assurance plans, operating plans, and sampling plans collectively for all Sandia locations • Provide a statement of work for contract laboratories collectively for all Sandia locations • Participate in quality assurance audits of all contract laboratories that provide services collectively for all Sandia locations

5.1.2 Chemical Inventory and Toxic Release Inventory Reporting

The chemical inventory report and the toxic release inventory report for operations at SNL/KTF in 2024 were submitted to EPA and the Hawai'i Hazard Evaluation and Emergency Response Office and support compliance with EPCRA (Table 5-14). The chemical inventory report documents both toxic chemicals in use and all chemical purchases.

Table 5-14. SNL/KTF applicable EPCRA reporting requirements

Section	EPCRA Section Title	Description	Reporting Required in 2024?
301–303	Emergency Planning	Sections 301–303 of EPCRA require an annual report that lists the inventories of chemicals that are above the reportable threshold planning quantities, including the location of the chemicals and the emergency contacts.	Yes
304	Emergency Notification	Section 304 of EPCRA requires an immediate notification following the accidental release of a reportable quantity of extremely hazardous substances.	No
311–312	Community-Right-to-Know: Toxic Chemical Release Inventory Reporting	Sections 311–312 of EPCRA provide requirements for maintaining safety data sheets for hazardous chemicals and for submitting inventory forms for these chemicals.	Yes
313	Toxic Release Inventory	Section 313 of EPCRA requires that a Toxic Release Inventory report be submitted for facilities that release toxic chemicals listed in Superfund Amendments and Reauthorization Act Title III over a threshold value.	No

—Environmental Reporting 2024: Chemical Inventory and Toxic Release Inventory

Chemical use at SNL/KTF was not above the reporting threshold for submitting a toxic release inventory report for any chemical. In 2024, there were no reportable quantity releases of extremely hazardous substances requiring notification under Section 304 of EPCRA.

5.1.3 Hawai'i State Environmental Requirements

The State of Hawai'i requirements shown in Table 5-15 are applicable to environmental program operations at SNL/KTF.

Table 5-15. Hawai'i administrative rules and Hawai'i revised statutes

Chapter and Provisions
HAR Title 11, Department of Health
HAR Title 11, Chapter 20, Rules Relating to Potable Water Systems
HAR Title 11, Chapter 58.1, Solid Waste Management Control
HAR Title 11, Chapter 60.1, Air Pollution Control
HAR Title 11, Chapter 62, Wastewater Systems
HAR Title 11, Chapter 280.1, Underground Storage Tanks
HAR Title 11, Chapter 451, State Contingency Plan
HRS Title 12, Conservation and Resources
HRS Title 12, Chapter 107, Threatened and Endangered Plants
HRS Title 12, Chapter 124, Indigenous Wildlife, Endangered & Threatened Wildlife, Injurious Wildlife, Introduced Wild Birds, and Introduced Wildlife
HRS Chapter 195, Natural Area Reserves System
HRS Title 19, Health
HRS Chapter 128D, Environmental Response Law
HRS Chapter 340E, Safe Drinking Water

Sources:
Hawai'i Administrative Rules (State of Hawaii 2023)
Hawai'i Revised Statutes (State of Hawaii n.d.)

5.2 Environmental Management System

The Environmental Management System is a continuing cycle of planning, implementing, evaluating, and improving processes to achieve environmental goals. This system facilitates identification of the environmental aspects and impacts of Sandia's activities, products, and services; identification of risks and opportunities that could impact the environment; evaluation of applicable compliance obligations; establishment of environmental objectives; and creation of plans to achieve those objectives and monitor their progress. The scope of the Environmental Management System includes all personnel, operations, products, and services performed at all Sandia sites.

Sandia personnel manage sustainability practices through an ISO 14001-certified Environmental Management System. Sandia pursued and received initial ISO 14001:2004 certification in June 2009. In 2015, the site-specific certifications for primary operating locations in New Mexico and California were integrated into a multisite ISO 14001:2004 certification. In 2018, the Environmental Management System transition to being certified under the new ISO 14001:2015 standard and was recertified during the most recent audit in fiscal year 2024. Operations at SNL/KTF are required to conform to the Environmental Management System requirements via internal Sandia procedures, but have not been included in the ISO 14001:2015 certification due to the limited scale of operations there.

In January 2018, an internal Environmental Management System assessment was conducted to evaluate conformance with ISO 14001:2004 requirements at SNL/KTF.

The Environmental Management System provides the following benefits:

- Improved environmental performance
- Enhanced compliance with environmental regulations
- Strengthened pollution prevention efforts
- Improved resource conservation
- Increased environmental efficiencies and reduced costs
- Enhanced image with the public, regulators, and potential new hires
- Heightened awareness of environmental issues and responsibilities

During fiscal year 2023, an Environmental Management System environmental aspects and impacts analysis found that greenhouse gas emissions from personnel air travel were a significant aspect for Sandia operations at SNL/KTF. An environmental aspects and impacts analysis is a process used to identify environmental aspects of Sandia activities and to score the associated environmental impacts. When significant aspects and negative impacts have been identified, environmental objectives—at all operating levels—are established to guide efforts toward minimizing those aspects and impacts where feasible. The significant environmental aspect established in fiscal year 2023 was carried forward and used in fiscal year 2024.

Aspects are any elements of activities, products, or services that can interact with the environment, and *impacts* are any changes in the environment, whether adverse or beneficial, wholly or partially resulting from activities, products, or services.

5.2.1 Site Sustainability Plan

A site sustainability plan is prepared annually and identifies Sandia's combined contributions toward meeting DOE sustainability goals and the broader sustainability program. The most recent plan, *Fiscal Year 2025 Site Sustainability Plan* (Sandia 2024), describes the performance status of all primary Sandia locations, including SNL/KTF, for fiscal year 2024.
Some highlights of Sandia's sustainability performance status in 2024 that apply to SNL/KTF include the following:

- Implemented and actively used power management features on eligible personal computers, laptops, and monitors.
- Improved MAN-004, SNL/NM Design Standards Manual (Sandia 2022), to increase the number of owned buildings that are compliant with the Guiding Principles for Sustainable Buildings (Council on Environmental Quality 2020)
- Led an interdepartmental working group to focus on SFTool+ outreach and education and continued to populate the 350APR "green language" clause into applicable contract categories valued over $250,000.350APR clause for sustainable acquisition and affirmative procurement into applicable contract categories; The 350APR clause states that a subcontractor shall "provide its services in a manner that promotes the expanded use of green products, reduces greenhouse gas emissions and protects the health and wellbeing of building occupants, service providers and visitors in the facility"

- Entered energy usage for fiscal years 2015 through 2022 into the sustainability dashboard

5.2.2 Sustainability Awards in 2024

The DOE Sustainability Performance Division sponsors the DOE Sustainability Awards, which recognize outstanding sustainability contributions by individuals and teams at DOE facilities across the country. The awards note excellence in energy, water, and fleet management projects and practices. Each year, Environmental Management System personnel select nominees from all primary Sandia locations for that year's Environmental Excellence Awards. In 2024, no nominations were submitted for the Environmental Excellence Awards that met the DOE's award criteria, and thus no nominations were submitted for the sustainability awards. Additionally, while personnel at SNL/KTF are encouraged to participate, no nominations for either the internal or external awards were received for SNL/KTF in 2024.

5.2.3 Vulnerability Assessment and Resilience Plan

In fiscal year 2022, Sandia personnel completed a vulnerability assessment and resilience plan focused on site infrastructure. The plan assessed potential changes in long-term weather conditions by the year 2050 and the natural hazards that could result from such changes (Table 5-16). Personnel projected the following natural hazards to be "almost certain" at SNL/KTF: drought, riverine flooding, and increased precipitation.

Table 5-16. Natural hazards and projected annual likelihood and frequencies at SNL/KTF

Regional Hazards Impacting Site Infrastructure	Hazard Description	Current Hazard Likelihood	Projected Effect	Projected Hazard Likelihood
Coastal flooding		Anticipated	Increase	Likely
Sea level rise		Extremely unlikely	Increase	Unlikely
Strong wind	Wind gusts that are greater than or equal to 58 mph; the only record is that of Hurricane Iniki in 1992	Anticipated	No change	Anticipated
Drought		Likely	Increase	Almost certain
Wildfire		Anticipated	Increase	Likely
Hurricane		Anticipated	Increase	Likely
Riverine flooding	Streams and rivers exceed the capacity of their natural or constructed channels to accommodate water flow	Almost certain	Increase	Almost certain
Precipitation	Daily rainfall greater than or equal to 1 inch	Almost certain	Increase	Almost certain
Tsunami		Extremely unlikely	No change	Extremely unlikely
Heat wave	Kaua'i County mitigation plan definition: conditions that are 10°F above the normal temperature for the island for at least three days	Anticipated	Increase	Likely

The vulnerability assessment and resilience plan also evaluated risks posed by the potential natural hazards and recommended solutions to increase resilience at SNL/KTF. Details on natural hazard risks by asset and infrastructure type at SNL/KTF can be found in Appendix A. Table 5-17 lists the resilience solution portfolio identified in the plan. These solutions are focused on addressing resilience planning gaps. Flooding due to coastal flooding, sea-level rise, increased precipitation, riverine flooding, and tsunamis are vulnerabilities at SNL/KTF. In addition, the site's proximity to the ocean makes SNL/KTF vulnerable to high-impact storms and associated flooding. The next revision to the vulnerability assessment and resilience plan is due in September 2026.

Table 5-17. Resilience solutions portfolio for SNL/KTF

Solution	Hazards Addressed	Priority Rank (High, Medium, or Low)	Implementation Status[a]
Address the flooding issue at the Launch Operations building	Coastal flooding, sea-level rise, hurricane, riverine flooding, precipitation, and tsunami	High	Identified
Harden and reinforce site buildings	Coastal flooding, strong winds, hurricane, and tsunami	High	Identified
Construct seawalls, floodwalls, and levees	Coastal flooding, sea-level rise, hurricane, and tsunami	Low	Identified
Improve stormwater drainage	Coastal flooding, sea-level rise, hurricane, riverine flooding, precipitation, and tsunami	High	Identified
Develop long-term plan for relocation of site assets	Coastal flooding, sea-level rise, hurricane, riverine flooding, and tsunami	Low	Identified

[a] Implementation status is defined per the DOE Sustainability Dashboard as follows: identified = needs reliable estimates; funded = funds authorized; operational = in place and fully functional (DOE n.d.).

5.3 Environmental Performance

Environmental performance is measured for all locations as progress toward achieving site environmental objectives, meeting or exceeding compliance, and contributing to corporate and contract performance goals. Results are tracked and reported internally through the ES&H Assurance Dashboard, the management review process, and management reports.

In addition, criteria for overall Sandia performance evaluation were set forth in the *Fiscal Year (FY) 2024 DOE/NNSA Strategic Performance Evaluation and Measurement Plan (PEMP)* (DOE/NNSA/SFO 2025). Subsequently, the DOE/NNSA Sandia Field Office prepared the *FY24 Performance Evaluation Summary* (DOE/NNSA/SFO 2025), assessing the management and operating contractor performance including environment, health, and safety for October 1, 2023, through September 30, 2024. The performance evaluation is the annual DOE/NNSA report card that ascribes a rating to five key performance goals and an overall rating. Sandia received a rating of "excellent" in the following three goals: Mission Delivery: Global Nuclear Security; Mission Innovation: Advancing Science and Technology; and Mission Leadership. A rating of "very good" was received for all Sandia locations in two remaining categories: Mission Delivery: Nuclear Weapons and Mission Enablement. Sandia received an overall rating of "excellent" for fiscal year 2024.

5.3.1 Audits, Appraisals, and Inspections

Sandia's environmental programs are routinely subjected to audits, appraisals, inspections, and verifications by external agencies (Table 5-18). The internal audit group may also conduct assessments, including reviews of the implementation of applicable policies, processes, or procedures; evaluations of corrective action validation assessments; and surveillances and walk-throughs. Self-assessments may evaluate performance and compliance and identify deficiencies and opportunities for improvement as well as noteworthy practices and lessons learned.

For the fiscal year 2024 performance evaluation, Sandia received an overall rating of excellent and DOE/NNSA identified no significant performance problems.

5.3.2 ES&H Operating Experience and Lesson Share Program

Sandia corporate Lessons Learned Program personnel and ES&H Operating Experience and Lesson Share Program personnel develop and share lessons learned throughout Sandia in accordance with the DOE O 210.2A, *DOE Corporate Operating Experience Program* (DOE O 210.2A 2011), purpose and objectives. Lessons learned summarize ES&H events or issues and associated key lessons, presenting the information as thought-provoking statements and questions to promote learning and facilitate dialogues among workers.

E&SH Operating Experience and Lesson Share Program personnel champion the creation of lesson share materials by ES&H Assurance personnel and other staff interested in identifying and communicating lessons learned from ES&H events or issues. All lesson share materials are made available to Sandia personnel through multiple internal databases and websites. Selected lessons learned materials are also shared through tier meetings and Sandia Daily News emails. Lessons Learned and ES&H Minutes are available on Sandia's internal LiveSafe website, a digital storehouse for ES&H information and resources that help Sandia personnel live safe and healthy lives. Environmentally focused ES&H Minutes in fiscal year 2024 included lessons focused on spill reporting and wildlife interactions.

5.3.3 Occurrence Reporting

Under DOE O 232.2A, Chg 1 (MinChg), *Occurrence Reporting and Processing of Operations Information* (DOE O 232.2A, Chg 1 (MinChg) 2017), *occurrences* are defined as "events or conditions that adversely affect, or may adversely affect, DOE (including the NNSA) or contractor personnel, the public, property, the environment, or the DOE mission." Events or conditions meeting the criteria thresholds identified in this order are occurrences. Whereas some environmental releases may not meet DOE O 232.2A Chg1 (MinChg) reporting thresholds, they may still be reportable to outside agencies.

Occurrences that met DOE O 232.2A Chg1 (MinChg) (DOE O 232.2A, Chg 1 (MinChg) 2017) criteria were entered into the DOE Occurrence Reporting and Processing System database. For this ASER, the Occurrence Reporting and Processing System database was queried for SNL/KTF occurrences in the following reporting criteria groups (as defined by DOE O 232.2A Chg1 [MinChg] (DOE O 232.2A, Chg 1 (MinChg) 2017):

- Group 5, Environmental
- Group 9, Noncompliance Notifications

- Group 10, Management Concerns and Issues (with identified environmental impact)
- Any occurrence that involved a Sandia environmental program

—Environmental Reporting 2024: Environmental Performance

Audits, Appraisals, and Inspections

Three inspections were performed at SNL/KTF in 2024. Table 5-18 lists the 2024 audits, including any findings, notices of violation or other environmental occurrences.

Table 5-18. Environmental-related external audits, assessments, and violations, 2024

Appraising Agency or Authority	Title or Description	Date	Summary
Naval Facilities Engineering Systems Command Hawaii Pearl Environmental Compliance Department	Pacific Missile Range Facility Spill Prevention, Control, and Countermeasure Plan Annual Inspection	12/5/2024	No Findings[a]
Aqua Engineers	Sandia Labs/Kauai Test Facility Annual Septic Inspection	11/4/2024	No issues
Hawaii Department of Health, Clean Air Branch	Hawai'i Department of Health Air Quality Inspection of Pacific Missile Range Facility facilities	4/10/2024	Field citation issued for failure to document completion of "tightness test" on spill prevention equipment.

[a] Findings in this context refers to a statement of fact based on objective evidence documenting an act or condition that does not meet a written requirement.

Occurrence Reporting

During 2024, one occurrence met the query criteria for reporting in the ASER as listed in Table 5-19.

Table 5-19. Occurrence reports per DOE O 232.2A, 2024

Reporting Criteria	Discovery Date	Report Level	Report Number and Title	Response
Group 9 – Noncompliance Notifications (1) - Any written notification from an outside regulatory agency that a site/facility is considered to be in noncompliance with a schedule or requirement.	April 11, 2024	Informational	**NA--SS-SNL-4000-2024-0005**, *Kauai Test Facility Field Citation for Incomplete Test Documentation*	On April 10, 2024, the Hawaii Department of Health's Underground Storage Tank Program performed an underground storage tank inspection at the Kauai Test Facility, which resulted in the issuance of a field citation for "failure to conduct annual tightness test on spill prevention equipment" in accordance with HAR 11-280.1-35(a)(1) for 2022. The test in question was performed in 2022, but the subcontractor failed to complete the test record documentation. Subsequent annual tests have been performed with complete test record documentation.

5.4 Environmental Permit Status

Environmental permits for SNL/KTF include those for a wastewater system, diesel generators, and an underground storage tank issued by the State of Hawai'i.

—*Environmental Reporting 2024: Environmental Permit Status*

Table 5-20 lists the applicable environmental permits in effect at SNL/KTF in 2024.

Table 5-20. SNL/KTF environmental permits, 2024

Permit Type	Permit Number	Issue Date	Expiration Date	Regulatory Agency
Individual wastewater system	File #4056-SNL, TMK: (4) 1-2-002:013	December 1, 2004	Not applicable	State of Hawai'i Department of Health
Noncovered source permit (two standby diesel generators)	NSP 0429-01-N	September 28, 2015	September 27, 2020[a]	State of Hawai'i Department of Health
Underground storage tank (2,500 gallons)	P-2016-064-R1	June 9, 2021	June 8, 2026	State of Hawai'i Department of Health
Excavation for Cultural Survey	FY23-018	03/29/2023	Not applicable	Pacific Missile Range Facility – Koa Lani

[a] Renewal application was received by the Hawai'i Department of Health Clean Air Branch on July 2, 2020.

Appendix A. Vulnerability Assessment and Resilience Plan Natural Hazard Risks

Kaua'i ocean view

Table A-1. Natural hazard risks by asset and infrastructure type at SNL/KTF

Asset and Infrastructure System Type	Number of Assets	Coastal Flooding	Sea Level Rise	Strong Wind	Drought	Wildfire	Hurricane	Riverine Flooding	Precipitation	Tsunami	Heat Wave
Workforce (e.g., outdoor workers, researchers, or office staff)	1	9.3	None	8.3	9.8	9.3	9.3	9.8	9.8	6.3	9.3
Energy generation and distribution systems	2	8.6	5.3	6.3	None	6.8	9.4	7.8	7.8	5.6	5.8
Buildings, may be broken down by type (e.g., those with critical functions or office buildings)	6	8.8	5.5	6.4	None	6.9	9.8	8.0	8.0	5.7	5.9
IT and telecommunication systems	2	8.6	5.3	6.3	None	6.8	9.3	7.8	7.8	5.6	5.8
Specialized or mission-critical equipment (e.g., lasers, high-performance computers, or particle accelerators)	5	9.0	5.6	6.5	None	7.1	9.9	8.1	8.1	6.0	6.1
Water and wastewater systems	1	8.3	5.0	None	None	6.5	9.3	7.5	7.5	5.3	5.5
Ecology and land preservation	1	9.5	7.5	4.5	10.0	9.5	9.5	10.0	7.5	6.5	9.5
Transportation and fleet infrastructure	1	8.3	5.0	4.5	None	6.5	6.5	8.5	7.5	5.0	5.5

Risk Score and Color Key	
High	≥7
Medium	3.5 ≤ 7
Low	< 3.5
None	Zero calculated risk

Glossary

Green sea turtle (*Chelonia mydas*)

A

abatement The act of reducing the degree or intensity of, or eliminating, pollution.

aboveground storage tank A fixed, stationary, or otherwise permanently installed storage tank that is wholly or partially above the ground surface and used to contain oil of any kind (petroleum, non-petroleum, synthetic, animal, or vegetable).

appraisal A documented activity performed according to written procedures and specified criteria to evaluate an organization's compliance and conformance with programs, standards, and other requirements contained in orders, laws, and regulations or in other requirements.

aquifer An underground geological formation, or a group of formations, containing water.

asbestos A mineral fiber that can pollute air or water and cause cancer or asbestosis when inhaled. Uses for asbestos-containing material include, but are not limited to, electrical and heat insulation, paint filler, reinforcing agents in rubber and plastics (e.g., tile mastic), and cement reinforcement.

aspect Any element of activities, products, or services that can interact with the environment.

audit (1) An examination of records or financial accounts to check their accuracy. (2) An adjustment or correction of accounts. (3) An examined and verified account.

B

benthic Of, relating to, or occurring in the depths of the ocean.

best management practice The preferred method or practice for managing operations.

biota The animal and plant life of a given region.

built environment The human-made space (including structures, features, and facilities) in which people live, work, and recreate.

C

climate A description of an area's average weather conditions and the extent to which those conditions vary during long intervals, generally decades or centuries.

contamination The introduction into water, air, or soil of microorganisms, chemicals, toxic substances, wastes, or wastewater in a concentration that makes the medium unfit for its next intended use. Also applies to the surfaces of objects, buildings, and various household use and agricultural use products.

corrective action (1) Steps taken to clean up spills. The process includes designing cleanup procedures to guide hazardous waste treatment, storage, and disposal. (2) An action identified to correct a problem or prevent its recurrence.

D

data quality objective A strategic, systematic process for planning scientific data-collection efforts.

decontamination The removal of adverse substances such as noxious chemicals, harmful bacteria or other organisms, or radioactive material from exposed individuals, rooms and furnishings in buildings, or the exterior environment.

demolition The act or process of wrecking or destroying, especially destruction by explosives.

discharge Any liquid or solid that flows or is placed onto any land or into any water. This includes precipitation discharges to storm drains, accidental or intentional spilling, and leaking, pumping, pouring, emitting, emptying, or dumping any material or substance onto any land or into any water.

E

ecology The relationship of living things to one another and their environment, or the study of such relationships.

ecosystem A network of living organisms (e.g., humans, animals, plants, and fungi) and nonliving components (e.g., air, water, mineral soil, buildings, and roads) that interact to comprise an overall environment.

effluent Wastewater (treated or untreated) that flows out of a treatment plant, sewer, or industrial outfall. Generally refers to wastes discharged into surface waters.

environment The sum of all external conditions affecting an organism's life, development, and survival.

environmental assessment An environmental analysis prepared pursuant to NEPA to determine whether a federal action would significantly affect the environment and thus require a more detailed environmental impact statement.

environmental impact statement A document required of federal agencies by NEPA for major projects or legislative proposals that significantly affect the environment. A tool for decision-making, it describes an undertaking's positive and negative effects and cites alternative actions.

environmental management A program designed to maintain compliance with federal, state, and local requirements.

environmental management system A continuing cycle of planning, evaluating, implementing, and improving processes and actions undertaken to achieve environmental goals.

environmental monitoring The collection and analysis of samples or direct measurements of environmental media such as air, water, and soil.

environmental release Any spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of material into the environment, which may include (but is not limited to) soil, air, and drain systems.

environmental restoration A project chartered with assessing and, if necessary, remediating inactive waste sites.

environmental restoration site Any location on the environmental restoration site list that has been identified as an area that is (or may be) contaminated—either on or beneath the land surface—as a result of operations. Contaminants may be chemicals, radioactive material, or both.

environment, safety, and health program A program designed to protect and preserve the environment and to ensure the safety and health of an organization's employees, contractors, visitors, and the public.

exotic species A species, which may be invasive or noninvasive, that is not native to the environment.

F

fault A fracture in the continuity of a rock formation caused by the earth's crust shifting or dislodging, after which adjacent surfaces are displaced relative to one another and parallel to the plane of fracture.

forb An herbaceous flowering plant that is not a grass.

G

geology The scientific study of the Earth's origin, history, and structure.

greenhouse gas emission An air pollutant comprised of an aggregate group of six greenhouse gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride measured as carbon dioxide equivalent.

groundwater The water found beneath the earth's surface in pore spaces and in fractures of rock formations.

H

habitat The place or environment where a plant or animal naturally or normally lives and grows.

hazardous substance (1) Any material that poses a threat to human health and/or the environment by virtue of possessing one or more hazardous characteristics as defined by RCRA, its amendments, and related regulations. Typical hazardous substances are toxic, corrosive, ignitable, explosive, or chemically reactive. (2) Any substance that EPA requires to be reported if a designated quantity of the substance is spilled in the waters of the United States or is otherwise released into the environment.

hazardous waste A waste with chemical or physical properties that meets the definitions in federal and state regulations and may cause harm to human health or the environment if not managed properly.

herbicide A chemical pesticide designed to control or destroy plants, weeds, or grasses.

human environment The natural and physical environment, and the relationship of present and future generations of people with that environment.

I

impact Any change in the environment, whether adverse or beneficial, wholly or partially resulting from activities, products, or services.

insecticide A pesticide compound specifically used to kill or prevent the growth of insects.

integrated safety management system A set of guidelines that systematically integrates safety into management and work practices at all levels so that missions are accomplished while protecting the worker, the public, and the environment.

L

lagoon (1) A shallow pond where sunlight, bacterial action, and oxygen work to purify wastewater; also used for storing wastewater. (2) A shallow body of water, often separated from the sea by coral reefs or sandbars.

M

migratory birds All birds listed within the Migratory Bird Treaty Act, 50 CFR 10.13, or which are a mutation or hybrid of any such species, including any part, nest, or egg.

Mixed Analyte Performance Evaluation Program A DOE quality assurance tool for environmental analytical services. It includes radiological, stable inorganic, and organic constituents (i.e., mixed analytes) in the same single-blind sample for analytical performance evaluation. The samples use various matrices, including soils, water, vegetation, and air filters. Program samples are not a mixed waste.

mixed waste Waste that contains both hazardous waste (as defined by RCRA and its amendments) and radioactive waste (as defined by the Atomic Energy Act and its amendments).

moku A land division that sections off portions of a Hawai'ian island.

N

National Environmental Policy Act The basic national charter for protecting the environment. It establishes policy, sets goals, and provides the means for carrying out the act.

natural resource A resource (actual or potential) supplied by nature.

O

occurrence 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.

outfall The place where effluent is discharged into receiving waters.

P

pelagic Of, relating to, or living or occurring in the open sea.

pollutant Generally, any substance introduced into the environment that adversely affects the usefulness of a resource or the health of humans, animals, or ecosystems.

polychlorinated biphenyl A family of highly toxic organic chlorine compounds. Because of their persistence, toxicity, and ecological damage via water pollution, the manufacture of PCBs was discontinued in the United States in 1976.

potable water Water free from impurities present in quantities that are sufficient to cause disease or harmful physiological effects.

Q

quality assurance A system of procedures, checks, audits, and corrective actions to ensure that research design and performance, environmental monitoring and sampling, and other technical and reporting activities are of the highest achievable quality.

quality control A system used to determine analytical accuracy, precision, and contamination when samples are collected and to assess the data's quality and usability.

R

radioactive waste Any waste that emits energy as rays, waves, streams, or energetic particles. Radioactive materials are often mixed with hazardous waste from nuclear reactors, research institutions, or hospitals.

reportable quantity A quantity of material, product compound, or contaminant that is reportable to a regulatory agency when released to the environment.

rodenticide A chemical or agent used to destroy rats or other rodent pests, or to prevent them from damaging food or crops.

ruderal The plant species that are first to colonize a disturbed area.

S

Sample Management Office A Sandia office where personnel manage environmental analytical laboratory contracts and assist with processing and tracking samples undergoing chemical and radiochemical analyses performed at these laboratories.

sampling and analysis plan A plan that contains criteria required for conducting sampling activities.

sediment Transported and deposited particles or aggregates derived from rocks, soil, or biological material.

soil All loose, unconsolidated mineral or organic materials on the immediate surface of the earth that support plant growth.

solid waste (1) Any garbage, refuse, or sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility. (2) Any discarded material—including solid, liquid, semisolid, or contained gaseous material—resulting from industrial, commercial, mining, or agricultural operations or from community activities.

stormwater Water runoff from rainfall or snowmelt, including that discharged to the sanitary sewer system.

surface water Water that has not penetrated much below the surface of the ground.

sustainability Those actions taken to maximize energy and water efficiency; minimize chemical toxicity and harmful environmental releases, particularly greenhouse gas; promote renewable and other renewable energy development; and conserve natural resources while sustaining assigned mission activities.

T

threatened or endangered species A species present in such small numbers that it is at risk of extinction.

toxic chemical Any chemical listed in EPA regulations under "Emergency Planning and Community Right-to-Know Act of 1986–

Section 313: Guidance for Reporting Toxic Chemicals."

treatment, storage, and disposal facility A facility at which waste management operations include treatment, storage, or disposal of hazardous wastes as defined by federal and state laws and regulations.

U

underground storage tank A storage tank installed completely below the ground surface, covered with earth, and used to contain oil of any kind (petroleum, non-petroleum, synthetic, animal, or vegetable).

V

vegetation Plant life or the total plant cover of an area.

W

waste management A method for dealing with the waste from humans and organisms, including minimizing, handling, processing, storing, recycling, transporting, and final disposal.

wastewater The spent or used water from a home, community, farm, or industry.

water pollution The presence in water of enough harmful or objectionable material to damage the water's quality.

wetland An area that is saturated by surface water or groundwater, having vegetation adapted for life under those soil conditions, such as swamps, bogs, fens, marshes, and estuaries.

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References

Sunset in Hawai'i

10 CFR 1021. 2011. *National Environmental Policy Act Implementing Procedures*. Washington, D.C.: Office of the Federal Register.

10 CFR 60. 2016. *Standards of Performance for New Stationary Sources*. Washington, D.C.: Office of the Federal Register.

15 U.S.C. § 2601 et seq. 1976. "Toxic Substances Control Act."

16 U.S.C. § 1531 et seq. 1973. "Endangered Species Act."

16 U.S.C. § 49. 1980. "Fish and Wildlife Conservation Act."

16 U.S.C. § 703 et seq. 1918. "Migratory Bird Treacy Act of 1918."

16 U.S.C. 1361-1421h. 1972. "Marine Mammal Protection Act."

16 U.S.C. 3371-3378. 1981. "Lacey Act Amendments of 1981."

16 U.S.C. 2016. "Conservation."

33 U.S.C. § 1251. 1977. "Clean Water Act."

33 U.S.C. § 2201. 2018. "America's Water Infrastructure Act of 2018."

33 U.S.C. § 40. 1990. "Oil Pollution Act."

36 CFR 60. 2012. *National Register of Historic Places*. Washington, D.C.: Office of the Federal Register.

40 CFR 112. 2011. *Oil Pollution Prevention*. Washington, D.C.: Office of the Federal Register.

40 CFR 1500-1508. 2005. *CEQ Regulations for Implementing the Procedural Provisions of NEPA (CEQ, 1978) (archived)*. Washington, D.C.: Office of the Federal Register.

40 CFR 262. 2021. *Standards Applicable to Generators of Hazardous Waste*. Washington, D.C.: Office of the Federal Register.

40 CFR 280. 2014. *Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)*. Washington, D.C.: Office of the Federal Register.

42 U.S.C. § 11001 et seq. 1986. "Emergency Planning and Community Right-to-Know Act."

42 U.S.C. § 133. 1990. "Pollution Prevention Act of 1990."

42 U.S.C. § 17001. 2007. "Energy Independence and Security Act of 2007."

42 U.S.C. § 2011. 1954. "Atomic Energy Act of 1954."

42 U.S.C. § 300f. 1974. "Safe Drinking Water Act of 1974."

42 U.S.C. § 4321 et seq. 1969. "National Environmental Policy Act (NEPA) of 1969."
42 U.S.C. § 6901 et seq. 1976. "Resource Conservation and Recovery Act of 1976."
42 U.S.C. § 6961. 1992. "Federal Facility Compliance Act of 1992."
42 U.S.C. § 7401. 1970. "Clean Air Act, as amended."
42 U.S.C. § 9601. 1980. "Comprehensive Environmental Response, Compensation, and Liability Act of 1980."
42 U.S.C. § 9601. 1986. "Superfund Amendments and Reauthorization Act (SARA) Title III of 1986."
7 U.S.C. § 136. 1910. "Federal Insecticide, Fungicide, and Rodenticide Act."
Amlin, A., and A Siddiqi. 2015. *Endangered Species Recovery Committee: Hawaiian* . Hawai'i Department of Land and Natural , 31:455-456.
Council on Environmental Quality. 2020. *Guiding Principles for Sustainable Federal Buildings and Associated Instructions.* Accessed 2022. https://www.sustainability.gov/pdfs/guiding_principles_for_sustainable_federal_buildings.pdf.
Department of Land and Natural Resources. 2025. *Mana Plains Forest Reserve.* Hawai'i Department of Land and Natural Resources.
DOE. n.d. *DOE Sustainability Dashboard.* Accessed April 2, 2024. https://sustainabilitydashboard.doe.gov/Home.aspx?ReturnUrl=%2f.
DOE O 144.1. 2009. *Department of Energy American Indian Tribal Government Interactions and Policy.* Washington, D.C.: U.S. Department of Energy.
DOE O 210.2A. 2011. *DOE Corporate Operating Experience Program.* Washington, D.C.: U.S. Departmennt of Energy.
DOE O 231.1B, Admin Change 1. 2012. *Environment, Safety and Health Reporting.* Washington, D.C.: U.S. Department of Energy.
DOE O 232.2A, Chg 1 (MinChg). 2017. *Occurrence Reporting and Processing of Operations Information.* Washington, D.C.: U.S. Department of Energy.
DOE O 414.1E. 2024. *Quality Assurance.* Washington, D.C.: U.S. Department of Energy.
DOE O 420.1C Chg 3 (LtdChg). 2019. *Facility Safety.* Washington, D.C.: U.S. Department of Energy.
DOE O 430.1C. 2019. *Real Property Asset Management.* Washington, D.C.: U.S. Department of Energy.
DOE O 458.1 Chg 4 (LtdChg). 2020. *Radiation Protection of the Public and the Environment.* Washington, D.C.: U.S. Department of Energy.
DOE P 141.1. 2011. *Management of Cultural Resources.* Washington, D.C.: U.S. Department of Energy.
DOE/AL. 1992. *DOE/EA-0492, Kaua'i Test Facility Environmental Assessment.* Albuquerque: U.S. Department of Energy, Albuquerque Operations Office.
DOE/DoD. 2023. *Environmental Roles and Responsiblities at Kauai Test Facility, MOA# N61064-20230816-12662.* Memorandum of Agreement, Memorandum of Agreement between Department of Navy/Department of Energy/NNSA/Sandia Field Office.
DOE/NNSA. 2019. *DOE/EA-2089, Site-Wide Environmental Assessment, Sandia National Laboratories, Kauai Test Facility.* Albuquerque: U.S. Department of Energy, National Nuclear Security Administration.
DOE/NNSA/SFO. 2021. *Biological Evaluation for Proposed and Ongoing Terrestrial Launch Activities at Kaua"i Test Facility.* Albuquerque: U.S. Department of Energy, National Nuclear Security Administration, Sandia Field Office.
DOE/NNSA/SFO. 2025. *Fiscal Year (FY) 2024 DOE/NNSA Strategic Performance Evaluation and Measurement Plan (PEMP).* Albuquerque: U.S. Department of Energy, National Nuclear Security Administration, Sandia Field Office.
DOE/NNSA/SFO. 2024. *Fiscal Year 2024 DOE/NNSA Strategic Performance Evaluation and Measurement Plan (PEMP).* Albuquerque: U.S. Department of Energy, National Nuclear Security Administration, Sandia Field Office.
DOE/NNSA/SFO. 2025. *FY2024 Performance Evaluation Summary.* Albuquerque: U.S. Department of Energy, National Nuclear Administration, Sandia Field Office.
EO 11988. 1977. "Executive Order 11988 of May 24, 1977, Floodplain Mangement." U.S. President.
EO 11990. 1977. "Executive Order 11990 of May 24, 1977, Protection of Wetlands." U.S. President.
EO 13112. 1999. "Executive Order 13112 of February 3, 1999, Invasive Species." U.S. President.

EO 13186. 2001. "Executive Order 13186 of January 10, 2001, Responsibilities of Federal Agencies to Protect Migratory Birds." U.S. President.
EO 13728. 2016. "Executive Order 13728 of May 18, 2016, Wildland-Urban Inteface Federal Risk Mitigation." U.S. President.
EO 13751. 2016. "Executive Order 13751 of December 5, 2016, Safeguarding the Nation from the Impacts of Invasive Species." U.S. President.
EO 14008. 2021. "Executive Order 14008 of January 27, 2021, Tackling the Climate Crisis at Home and Abroad." U.S. President.
EO 14057. 2021. "Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability." U.S. President.
EPA. 1996. "Transmittal from Michael Ardito, Hawaii State Project Officer for Superfund, EPA Region IX, to Mr. John Gould, U.S. Department of Energy, Albuquerque Operations Office." *Fiscal Closure Letter RE: Kauai Test Facility, EPA ID No. HID984469908.* Kauai: U.S. Environmental Protection Agency.
HAR-11.280.1. 2021. "Underground Storage Tanks."
HAR-11-262.1. 2017. "Hazardous Waste Management."
Hawaii DLNR. 2025. *Mana Plains Forest Reserve.* Honolulu: Hawai'i Department of Land and Natural Resources.
Hawaii DLNR. 2015. *State of Hawaii Non-covered Source Permit No. 0429-01-N, Expiration Date September 27, 2020.* Honolulu: State of Hawaii Department of Land and National Resources.
ISO 14001:2015. 2015. *Environmental Management Systems: Requirements.* Geneva: International Organization for Standardization.
MacDonald, G., D. Davis, and D. Cox. 1960. *Bulletin 13, Geology and Ground-water Resources of the Island of Kauai, Hawaii.* Honolulu: Hawaii Division of Hydrography.
Moffat, R. M., and G. L. Fitzpatrick. 1995. *Surveying the Mahele: Mapping the Hawaiian Land Revolution.* Hong Kong: Editions Limited.
PL 101-601. 1990. "Native American Graves Protection and Repatriation Act."
PL 103-344. 1994. "American Indian Religious Freedom Act Amendments of 1994."
PL 105-85. 1997. "Sikes Act Improvement Act (Title XXIX)."
PL 89-665. 1966. "National Historic Preservation Act."
PL 96-95. 1979. "Archaeological Resources Protection Act of 1979."
Sandia. n.d. *Facts and Figures.* https://www.sandia.gov/about/facts-figures/.
Sandia. 2024. *Fiscal Year 2025 Site Sustainability Plan.* Albuquerque: Sandia National Laboratories.
Sandia. 2025. *GN470121, Ecological Compliance at Sandia National Laboratories, Kaua'i Test Facility.* Albuquerque: Sandia National Laboratories.
Sandia. 2022. *MAN-004, Sandia National Laboratories/New Mexico Design Standards Manual.* Albuquerque: Sandia National Laboratories.
Sandia. 2025. *Non-covered Source Permit No. 0429-01-N: Calendar Year 2024 Annual Emissions Report and Semi-Annual Monitoring Report for Kaua'i Test Facility.* Albuquerque: U.S. Department of Energy, National Nuclear Security Administration.
Sandia. 2020. *Protected Species Management Plan, Sandia National Laboratories/Kauai Test Facility.* Albuquerque: Sandia National Laboratories.
—. n.d. *Sandia Environmental Reports.* Accessed 2022. http://www.sandia.gov/news/publications/environmental_reports/.
—. 2024. *Sandia News.* https://www.sandia.gov/news/.
State of Hawaii. 2023. *Hawaii Administrative Rules.* Accessed 2022. https://cca.hawaii.gov/hawaii-administrative-rules/.
—. n.d. *Hawaii Revised Statutes.* Accessed 2022. https://www.capitol.hawaii.gov/hrsall/.
Sweeney, M. 1994. *Archaeological Inventory Survey Pacific Missile Range Facility, Majors Bay Area, Kauai, Hawaii.* Honolulu: International Archaeological Research Institute, Inc.
U.S. Census Bureau. n.d. *Quick Facts.* Accessed May 2024. https://www.census.gov/quickfacts/kauaicountyhawaii.

U.S. Navy. 2014. *Department of the Navy, Biological Assessment. Effects of Base Infrastructure Operations and Maintenance on Federally Threatened and Endangered Species at Pacific Missile Range Facility Kauai, Hawai'i.* Kauai: U.S. Navy.

U.S. Navy. 2018. *Department of the Navy, Updated Revised Biological Assessment for the Effects of Base Infrastructure, Operations and Maintenance on Federally Threatened Newell's Shearwater.* Kauai: U.S. Navy.

U.S. Navy. 2010. *Pacific Missile Range Facility Intercept Test Support Environmental Assessment/Overseas Environmental Assessment.* Huntsville: U.S. Navy.

U.S. Navy. 2023. *Spill Prevention, Control, and Countermeasure Plan for Commander Navy Region Hawaii (CNRH), Pacific Missile Range Facility (PMRF), Kaua'i, Hawai'i.* Kauai: U.S. Navy.

USFWS. 2018. *Biological Opinion of the U.S. Fish and Wildlife Service for the Proposed Base-Wide Infrastructure, Operations, and Maintenance Activities at the Pacific Missile Range Facility, Island of Kaua'i, Hawaii.* Washington, D.C.: U.S. Fish and Wildlife Service.

USFWS. 2021. *Request for Section 7 Consultation on Proposed and Ongoing Terrestrial Launch Activities at Kaua'i Test Facility.* Honolulu: U.S. Fish and Wildlife Service.

Western Regional Climate Center. n.d. *WAIMEA 947, Hawaii (519629).* Accessed 2020. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?hiwaim.


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Laboratories