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Sandia National Laboratories, New Mexico

2007 ASER

annual site environmental report

SUMMARY PAMPHLET

Sandia National Laboratories

National Nuclear Security Administration

Sandia is a multi-program laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under Contract DE-AC04-94AL85000.
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ABSTRACT

Sandia National Laboratories, New Mexico (SNL/NM) is a government-owned, contractor-operated facility. Sandia Corporation, a wholly-owned subsidiary of Lockheed Martin Corporation, manages and operates SNL/NM for the U.S. Department of Energy (DOE), National Nuclear Security Administration (NNSA). The DOE/NNSA Sandia Site Office (SSO), Albuquerque, New Mexico administers the contract and oversees contractor operations. This pamphlet summarizes data and the compliance status of Sandia National Laboratories' environmental protection and monitoring programs through December 31, 2007. Major environmental programs include air quality, water quality, groundwater protection, terrestrial surveillance, waste management, pollution prevention, long-term environmental stewardship, the environmental management system, and implementation of the National Environmental Policy Act.

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Introduction

The U.S. Department of Energy (DOE) National Nuclear Security Administration (NNSA) Sandia Site Office (SSO) and Sandia Corporation (Sandia) are committed to protecting the environment and preserving the health and safety of our employees and the public. This Annual Site Environmental Report (ASER) Summary Pamphlet was published in response to the community's desire for a document that summarizes annual environmental activities at Sandia National Laboratories, New Mexico (SNL/NM). For additional technical information and monitoring results at SNL/NM, we encourage you to request a copy or view an online copy of the 2007 ASER at:

http://www.sandia.gov/news/publications/environmental/index.html

Sandia collects environmental data to determine the impact of site operations and reports the impact of existing SNL/NM operations on the environment. The environmental programs at Sandia include air and water quality, environmental monitoring and surveillance, and activities associated with the National Environmental Policy Act (NEPA). Sandia's objective is to maintain compliance with federal, state, and local requirements, and to affect the corporate culture so that environmental compliance practices continue to be an integral part of operations.

DOE Order 450.1, Environmental Protection Program, requires DOE sites to implement sound stewardship practices that are protective of the air, water, land and other natural and cultural resources impacted by DOE operations, and by which DOE cost effectively meets or exceeds compliance with applicable environmental, public health, and resource protection requirements. In accordance with DOE Order 450.1, Sandia implemented an Environmental Management System (EMS), which addresses the environmental consequences of Sandia's activities, products and services.

We hope that you will find the following pages informative and interesting. We appreciate feedback from the community and invite you to ask questions or offer suggestions about what you would like to see in next year's Summary Pamphlet by contacting:

U. S. Department of Energy
National Nuclear Security Administration
Sandia Site Office
P.O. Box 5400
Albuquerque, NM 87185-5400
Attention: Karen Agogino

Contents:

Environment at Sandia National Laboratories, New Mexico (SNL/NM)

Sunrise at Sandia

Sandia National Laboratories, New Mexico (SNL/NM) is located on Kirtland Air Force Base (KAFB) in Albuquerque, New Mexico. KAFB is a 51,559-acre military installation, including 20,486 acres withdrawn from the Cibola National Forest through an agreement with the U.S. Forest Service. KAFB is located at the foot of the Manzanita Mountains, with a mean elevation of 5,384 feet and a maximum of 7,986 feet.

KAFB is host to over 150 tenant groups, including SNL/NM, which is located on the east side of KAFB. Sandia conducts its operations within 2,841 acres, incuding five technical areas (TAs) and several remote test areas (see Figure 1). An additional 5,817 acres in remote areas are provided to DOE/NNSA through land-use agreements with the U.S. Air Force and Isleta Pueblo. The regional setting of SNL/NM provides a diverse range of geological, hydrological, climatic, and ecological settings.

KAFB has widely varied topography, ranging from rugged mountains on the east to nearly flat plains on the west. The withdrawn area includes a portion of the Manzanita Mountains within the Cibola National Forest. The Sandia Mountains (named for the watermelon color seen on the mountains at

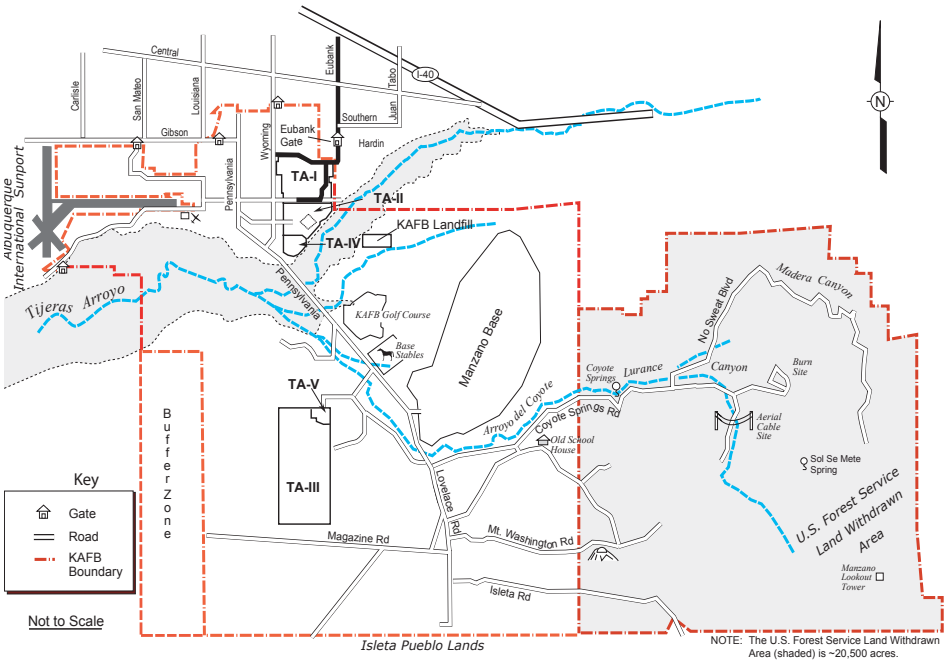


Figure 1: SNL/NM technical areas and the U.S. Forest Service Land Withdrawn Area

sunset) and the Manzanita Mountains provide a beautiful setting at SNL/NM. The Sandia Mountains form a 13-mile long escarpment distinguished by steep cliffs, pinnacles, and narrow canyons. The remainder of KAFB is situated on gently west-sloping foothill terrain that grades to widespread flat areas where the majority of USAF and SNL/NM facilities are located.

The regional geologic setting in which SNL/NM and KAFB are situated has been subjected to relatively recent (in geologic time) episodes of basaltic volcanism and ongoing regional rifting (crustal extension). The Rio Grande rift has formed a series of connected down-dropped basins, where vast amounts of sediments were deposited.

New Mexico is the fifth largest state in the U.S., with 121,666 square miles in area and a total population of approximately 1.93 million. A recent count of the population within an 80-kilometer (50-mile) radius of SNL/NM was 854,211 residents, encompassing all or part of nine counties (see Figure 2). The Albuquerque metropolitan area has approximately 723,296 residents.

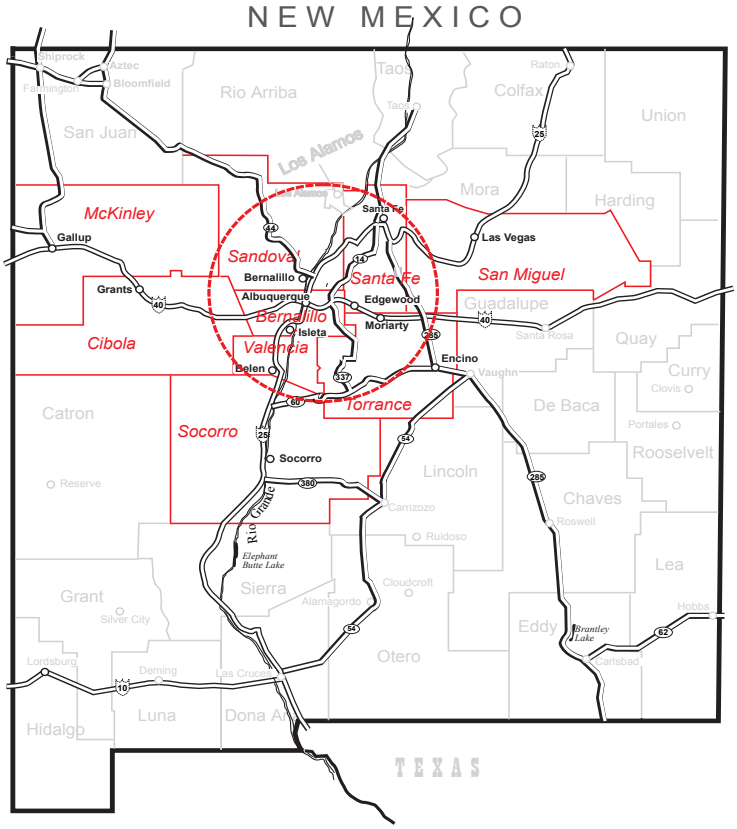


Figure 2: State of New Mexico Map -
The overlay shows major roads, cities, county lines, and the 80 kilometers / 50-mile radius from SNL/NM facilities (dashed circle).

Sunset at Old South Dome

Fox at SNL/NM

Environmental Management System (EMS)

In accordance with DOE Order 450.1, *Environmental Protection Program*, Sandia implemented an EMS as part of the Integrated Safety Management System (ISMS). SNL/NM uses the EMS as a framework to manage and improve its environmental compliance and sustainability practices. Through EMS, Sandia identifies the environmental consequences of SNL/NM's activities, products, and services, and develops objectives and measurable targets to mitigate potential impacts to the environment.

Sandia initially implemented its EMS in December 2005. Since that time, Sandia has worked to fully implement and establish the EMS in conjunction with ISMS in all site operations. Some major accomplishments of the EMS for Fiscal Year (FY) 2007 include the items listed below:

- EMS objectives were written targeting corporate and division levels at Sandia; quarterly tracking is administered to survey successful implementation of the objectives;
- Internal and external outreach events were conducted to increase environmental awareness;
- The EMS Award Program and Lecture Series was established to reward environmental accomplishments at Sandia;
- Corporate and division-level EMS self-assessments were conducted, and identified deficiencies were addressed;
- Environmental program plans that detail requirements, roles and responsibilities, schedules, deliverables, and budgets were updated;
- Benchmarking exercises were conducted to determine how DOE and other facilities designed and implemented their EMS;
- A Chemical Exchange Program was implemented to target the reapplication of unused chemicals at SNL/NM; and
- International Organization for Standardizations (ISO) 14001 Overview and Internal Auditor Training was conducted, and an ISO 14001 Gap Analysis was completed.

The EMS is a continuous improvement system that includes all environmental programs in an integrated approach to effectively minimize the impact of SNL/NM's operations on the environment. Each year, SNL/NM's work processes are reviewed, and new environmental objectives and measurable targets are set to ensure continual improvement in Sandia's environmental performance.

Visit the EMS Website for more information:

http://environment.sandia.gov/new/index.shtml

Long-term Environmental Stewardship (LTES)

Wright's Fishhook Cactus

The LTES Program involves stewardship for past, present, and future activities at SNL/NM. The LTES Program's purpose is to promote the long-term stewardship of a site's natural and cultural resources throughout its operational, closure, and post-closure life-cycle. The environmental programs mentioned in this Summary Pamphlet and in the ASER support that stewardship.

An important component of the LTES Program is long-term stewardship (LTS) of legacy sites. This includes post-closure care of waste management units, and long-term monitoring and maintenance of former environmental restoration (ER) sites. LTS also includes institutional control and outreach activities to keep the public informed.

Post-Closure Care of Waste Management Units
Sandia conducted extensive excavation and cleanup activities over a 15-year period at the Chemical Waste Landfill (CWL) at SNL/NM, removing wastes, contaminated soil, and chlorinated solvents in the soil below the landfill. Contaminated soil from the CWL was treated and placed in a long-term containment cell in the nearby Corrective Action Management Unit (CAMU). The cell is equipped with an engineered cover, engineered side and bottom liners, and monitoring systems. Both the CWL and the CAMU are monitored and maintained as part of post-closure care.

Long-Term Monitoring and Maintenance of ER Sites
Some ER sites require long term controls, such as monitoring or restrictions on future use, after corrective action is completed. These requirements are established by the New Mexico Environment Department (NMED). Sandia's LTS activities are increasing as remedial activities required at ER sites are completed.

More than 50 groundwater monitoring wells associated with former ER sites are monitored to meet NMED requirements. Water levels and water quality data are determined during monitoring. In 2007, one well in TA-V was replaced. The data are reported in detail in the Annual Groundwater Monitoring Report, which can be found on the following Website:

http://www.sandia.gov/news/publications/environmental/index.html

Community Liaison and Stakeholder Involvement Activities
In 2007, stakeholders participated in the semi-annual DOE/U.S. Department of Defense meetings on environmental activities, as well as periodic LTS working groups and meetings. These meetings provided a forum for community input and the opportunity for progress updates regarding the current status of LTS.

In 2007, Sandia generated a Community Checklist, which was compiled by members of Sandia's workforce and community members who have an interest in LTS at Sandia. The Community Checklist contains the community members' questions about LTS. The questions were addressed with Members of the Workforce and posted to the LTES website.

Please visit the LTES Website for more information:

http://ltes.sandia.gov/

Click on "Legacy" for information about LTS sites.

Cooper's Hawk

Environmental Restoration (ER) Project

Sandia's ER Project was created under the DOE Office of Environmental Management to identify, assess, and remediate sites potentially contaminated by past spills, releases, or disposal activities in accordance with corrective action requirements of the Resource Conservation and Recovery Act (RCRA), applicable regulations, and hazardous waste operating Permit NM5890110518-1 issued in 1992 and 1993 to DOE and Sandia by the U.S. Environmental Protection Agency (EPA) and the NMED. ER sites addressed included solid waste management units (SWMUs) and additional areas of concern (AOC) identified by NMED that were not SWMUs.

Sandia, DOE, and NMED signed a Compliance Order on Consent (COOC) in April 2004. The COOC fulfills the requirements for corrective action for releases of hazardous waste or hazardous constituents as well as for nitrate and perchlorate releases.

ER Project History

The initial identification of ER sites at SNL/NM was completed in 1987; 139 SWMUs and 23 additional AOCs were identified in the initial RCRA Facility Assessment. Since then, approximately 500 individual sites, potential sites, or individual historical activities have been identified and addressed. Many of these sites were confirmed to contain little or no contamination, and corrective action has been completed. In addition to the SNL/NM site, other sites included in the original scope of Sandia's ER Project were SNL California (SNL/CA), the SNL Kauai Test Facility (KTF) and the SNL Tonopah Test Range (TTR). There were also a number of miscellaneous sites located in other areas, nationwide and internationally. ER sites that are not at the SNL/NM facility have been addressed.

Cleanup and Site Closures

Waste generated from corrective action at SNL/NM ER sites includes hazardous waste, radioactive low-level waste (LLW), mixed hazardous/radioactive waste (MW), waste subject to the Toxic Substances Control Act (primarily polychlorinated biphenyls [PCBs] with some asbestos), and industrial solid waste.

Corrective Action Complete (CAC) Status

ER sites are proposed for CAC status based on levels of contamination present and/or completion of specified remedial activities. Once NMED grants CAC status, a site is placed in one of two tables in the permit: "Corrective Actions Complete Without Controls" or "Corrective Actions Complete With Controls," based on its land-use category. The majority of ER sites have been granted CAC status under a process in which risks to human health and the ecosystem have been calculated for residual contamination according to U.S. Environmental Protection Agency (EPA) and NMED guidelines. The level of contamination remaining and the appropriate land-use category (i.e., industrial, residential, or recreational use) are used as inputs to determine the risk to human health and the ecosystem.

Mixed Waste Landfill (MWL)

The MWL, one of the SWMUs at SNL/NM, is subject to the corrective action requirements of the COOC and also to a Final Order for Corrective Measures (FOCM) issued by the NMED. Subgrade preparation for a landfill cover was completed during FY 2007, but final corrective action is still pending NMED approval of the Corrective Measure Implementation Plan.

2007 Status and Activities

At the close of 2007, there were 61 regulated ER sites and three groundwater AOCs remaining on the permit. Of these, 54 sites will be removed from the permit pending final NMED approval. Five additional sites have received CAC status from NMED and are addressed in a permit modification under NMED review. Final remedies are pending for the three groundwater AOCs and for the Mixed Waste Landfill. NMED issued a draft permit for post-closure care at the Chemical Waste Landfill; this is discussed under LTES. All CAC proposals and permit modifications are available for review at the University of New Mexico Zimmerman Library.

Mormon Tea at Sandia

Groundwater Protection at SNL/NM

The regional aquifer, supplying the City of Albuquerque and KAFB, is located within the Albuquerque basin. SNL/NM gets its drinking water from KAFB, which gets nearly all of the supplied water from wells in the Albuquerque basin. The basin was created by the extension of the Rio Grande Rift that began forming approximately 30 million years ago. The two groups that conduct groundwater monitoring at SNL/NM are:

1. the ER Project; and
2. the Groundwater Protection Program (GWPP).

In Fiscal Year 2007, water level measurements were obtained from 121 wells within and immediately outside the boundaries of KAFB, and the data were used to construct a regional water table elevation map.

Groundwater Water Quality Monitoring

In Fiscal Year 2007, water samples were collected and analyzed from 64 monitoring wells at SNL/NM by the GWPP and the ER Project. Results from both groups are compared to maximum contaminant levels established by the EPA, maximum allowable concentrations for groundwater promulgated by the State of New Mexico Water Quality Control Commission, and derived concentration guides for radionuclides, established by the DOE/NNSA.

For detailed well information and sampling results, please see the 2007 Annual Groundwater Monitoring Report at the following Website:

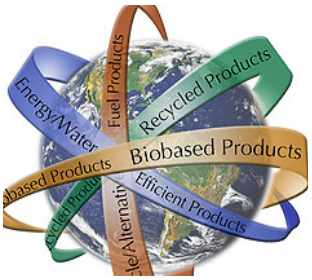
http://www.sandia.gov/news/publications/environmental/index.html

Groundwater Well Installation at SNL/NM

Groundwater Sampling Analysis at SNL/NM

Groundwater Well Installation at SNL/NM

Pollution Prevention (P2)



The focus of the P2 Program is to provide guidance and technical support to reduce waste generation and resource consumption, and to enhance the overall efficiency of processes and organizations within SNL/NM. The program focuses on reducing hazardous, radioactive, and solid wastes, with the associated goal of optimizing processes. Additionally, the P2 program sets annual targets for recycling, waste reduction, environmentally preferable purchasing (EPP), and reduction of environmental releases.

The P2 program is directed and guided by federal laws, DOE orders, and federal Executive Orders (EO) such as EO 13423 "*Strengthening Federal Environmental, Energy, and Transportation Management*."

Awareness and Outreach

The P2 staff conducts awareness programs and outreach activities that promote and teach P2 strategies and technologies regarding waste generators. For more information, please visit the P2 Website at:

http://p2.sandia.gov

The P2 Program's premiere awareness event is the celebration of Earth Day (held on April 19, 2007). Approximately 475 people attended Dr. Paul MacCready's presentation on the "*Future of Surface Transportation: A Future Very Different from the Past.*" The event included 18 displays, depicting a virtual house with sustainable products and options for the home.

P2 Awards

In 2007, SNL/NM received several awards for P2 accomplishments:

EPA Waste Wise Award

SNL/NM received an EPA Waste Wise Gold Achievement award in the Federal Facilities category in May 2007. This is the seventh consecutive year that Sandia has been recognized by the EPA for its accomplishments in waste minimization, recycling collection, and buying recycled-content products. EPA's Waste Wise Program is a voluntary partnership program to help businesses and institutions find practical methods for reducing solid waste.

The Gold Achievement award was for SNL/NM's efforts in aggressively pursuing continuous improvement in green purchasing. Through the availability of new tools and programs, advancements were made in recycled content (affirmative) procurement, electronics purchasing, bio-based purchasing and closed loop contracts.

DOE Awards for P2 Accomplishments

Sandia won a 2007 DOE P2 Star Award (highest level P2 award in DOE) for the High-Energy Radiation Megavolt Electron Source (HERMES III Accelerator) Program, which developed and implemented procedures and measures to reduce waste by minimizing the use of hazardous chemicals, extending the life of the deionized resin beds, reusing and modifying test hardware, and reducing the venting of sulfur hexafluoride process gas. These comprehensive waste minimization techniques save thousands of dollars annually.

For work completed in 2007, Sandia received five awards in four different categories from the DOE/NNSA P2 Program. Three of the five awards have been submitted for consideration for the prestigious White House Closing the Circle Award.

Sandia's Earth Day Event

National Environmental Policy Act (NEPA) & Quality Assurance (QA)

NEPA

Sandia provides DOE/NNSA/ Sandia Site Office (SSO) with technical assistance supporting compliance with NEPA and the National Historic Preservation Act. NEPA requires federal agencies, and other organizations that perform federally-sponsored projects, to consider:

1. Environmental issues associated with proposed actions,
2. Awareness of the potential environmental impacts associated with these issues, and
3. Including this information in early project planning and decision-making.

The SNL/NM NEPA Team reviews projects for conformance to existing DOE NEPA documents and determinations. In 2007, the NEPA team reviewed a total of 436 proposed projects, and transmitted 50 NEPA checklists to the DOE/NNSA/SSO for review and determination.

SNL/NM Site-Wide Environmental Impact Statement (SWEIS)

Consistent with NEPA regulations, DOE prepares a SWEIS for its large, multiple-facility sites. The SWEIS update process was significantly revised in 2006 to better track and evaluate environmental operational limits at both the facility and site level.

Operating parameter projections for 2007 and 2008 were developed using the best available information on future activities. To aid in the evaluation of operational limits, the format for the SWEIS update report was modified to discuss exceedances within the context of environmental impacts analyzed in the SWEIS, to enable better judgment about whether an exceedance could result in effects to the environment. Projections for environmental parameters at facilities were rolled up to develop site-wide projections for 2007 and 2008, alerting decision-makers to the potential for future exceedances of site-wide parameters.

More information about the DOE/NNSA/SSO and Sandia NEPA activities can be found in the 2007 ASER at this Website:

http://www.sandia.gov/news/publications/environmental/index.html

QA

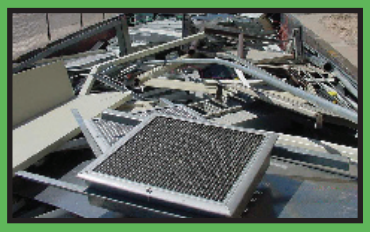
QA principles, elements, and tools are an integral part of Sandia activities to assure management, customers, regulators, and the community that Sandia is conducting business in a compliant manner, with respect for our employees, the community, and the environment. One of the QA principles used by SNL/NM is the DOE/NNSA ISMS to ensure that work is planned, hazards are analyzed and controlled, work is performed according to approved plans, and lessons learned are communicated. The ISMS is a process that continually improves operations and performance.

Environmental programs utilize QA principles to maintain the integrity of program plans, sampling, and analysis. The Sandia's Sample Management Office (SMO) provides environmental programs with guidance and sample management support. SMO processes have been developed to ensure that contractor laboratories provide the quality data and laboratory analysis through validation of laboratory data packets and by conducting audits of contractor laboratories. QA plans are implemented to ensure that data validation and records management are a key asset to providing quality environmental data.

Pleuraphis jamessi at Sandia

Waste Management

Recycling at SNL/NM



Recycled Steel

White Paper

Aluminum Cans

Waste generated in 2007 at SNL/NM was managed at one or more of the following facilities: the Hazardous Waste Management Facility (HWMF), the Thermal Treatment Facility (TTF), the Radioactive and Mixed Waste Management Facility (RMWMF), Manzano Storage Bunkers (MSB) and the Solid Waste Transfer Facility (SWTF).

HWMF

The HWMF manages hazardous wastes and chemical wastes. The waste processing functions include reviewing waste characterization, and waste collection, segregation, packaging, storage, and shipment to off-site facilities for recycling, treatment, and/or disposal. In order to track waste through each waste handling step, each waste item received at the HWMF is labeled with a unique bar code and the information is maintained in a database. Waste is usually processed and shipped off-site within 90 days of receipt. In 2007, a total of 12,551 package items were handled by the HWMF. The HWMF shipped a total of 50,777 kilograms (kg) (111,709 pounds [lb]) of RCRA-regulated hazardous waste, including recyclable waste.

RMWMF

The RMWMF manages SNL/NM's radioactive and mixed waste. The waste processing functions at the RMWMF include waste characterization, collection, segregation, treatment, packaging, storage, and shipment to permitted off-site facilities. Transuranic (radioactive) Waste (TRU) and TRU/MW may be routed through Los Alamos National Laboratory or directly to the Waste Isolation Pilot Plant for final disposal. In 2007, the RMWMF shipped 25,977 kg (57,253 lb) of LLW, and 12,489 kg (27,526 lb) of MW (562 cubic feet [ft^3]) to permitted off-site facilities for treatment and/or disposal. In 2007, 1,717 kg (3,785 lb) of MW was treated at the RMWMF to meet applicable hazardous waste treatment standards. Of the treated waste, 267 kg (588 lb) were rendered non-hazardous. The treated wastes were then stored at the RMWMF or MSB, or they were shipped to permitted off-site facilities.

TTF and MSBs

The TTF is operated by SNL/NM as a treatment facility for certain explosive waste streams. The MSBs are used for storage of LLW, MW, TRU, and mixed TRU (MTRU) wastes.

SWTF

The SWTF manages solid waste from SNL/NM operations in compliance with all applicable regulations; waste processing functions include collecting waste, screening it for prohibited items, processing it, and shipping it to offsite facilities for recycling or disposal. The SWTF also processes and ships (but does not collect) solid waste from KAFB

SNL/NM Radioactive & Mixed Waste

Low level waste (LLW) *is primarily contaminated with isotopes of strontium, plutonium, cobalt, americium, thorium, cesium, tritium, and uranium (plutonium and americium in LLW are below the activity level designated for TRU waste). Sandia's LLW inventory generally consists of laboratory waste, decontamination and demolition (D&D) debris, and personnel protection equipment (PPE).*

Mixed waste (MW) *generally consists of a radioactive component with the addition of RCRA-hazardous components such as metal or solvents. The radioactive component in MW results primarily from tritium, cesium, strontium, plutonium, americium, and uranium.*

TRU *may derive from sealed instrument sources, D&D waste, PPE, and laboratory waste. The radioactive component in TRU is generally americium, plutonium, neptunium, and curium.*

and DOE/NNSA. In 2007, the SWTF received 1,080,286 kg (2,379,485 lb) of SNL/NM solid waste and 1,048,547 kg (2,309,575 lb) of KAFB and DOE/NNSA solid waste.

Recyclables

The secondary function of the SWTF is to collect, process (screen, bale, and track), market, and ship recyclable the following materials from SNL/NM: cardboard, white paper, mixed paper, aluminum cans, computers, circuit boards, scrap metals, toner cartridges, and plastics (see Figure 3). Proceeds from the sale of recyclable materials are used to offset recycling program costs. The SWTF also provides some recycling support for KAFB and DOE/NNSA. In support of small SNL/NM construction and demolition projects, the Construction and Demolition (C&D) Recycle Center accepts small quantities of C&D waste, but it is managed separately from the commercial solid waste. The C&D Recycle Center provides contractors of small C&D projects a location to recycle cardboard, wood, and scrap metal.

Recycle bin at SNL/NM

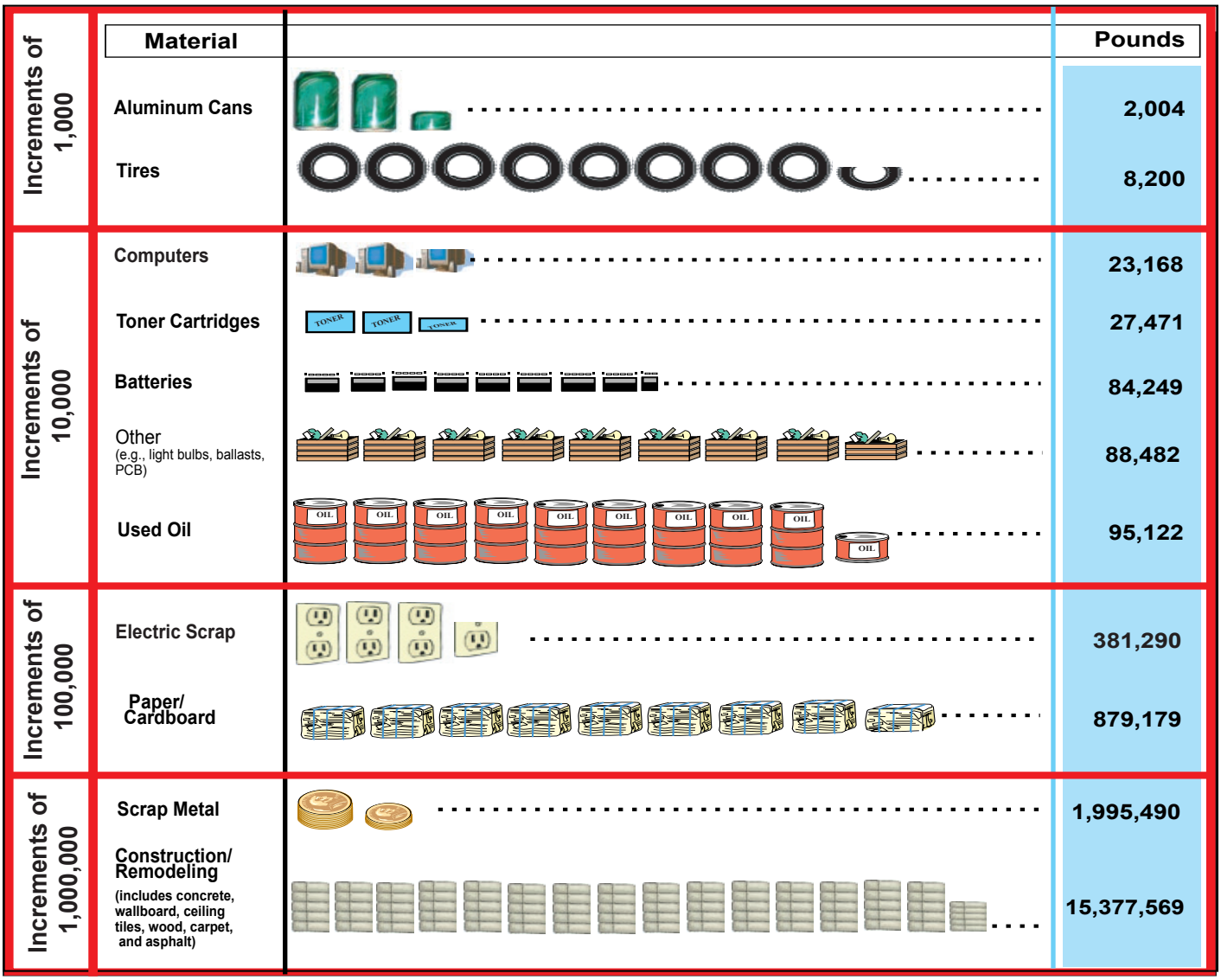


Figure 3: Categories of Waste Recycled at SNL/NM in 2007

Terrestrial Surveillance

Long Sled Track at SNL/NM

Terrestrial surveillance is conducted at SNL/NM through collection and analysis of samples in order to characterize environmental conditions and identify trends. Other objectives of terrestrial surveillance are to establish baseline levels of radiological and non-radiological constituents and assess the effectiveness of P2.

In order to detect potential releases or migration of contaminated material to off-site locations, samples of soil, sediment, and vegetation are collected from on-site, perimeter, and off-site locations, samples of (community locations outside KAFB boundaries). In 2007, there were no terrestrial sample results indicating concerns that would prompt actions at locations that are not already being addressed by the ER Project.

In 2007, a special sampling campaign and summary report of non-radiological results was prepared for several locations. The southern end of the Long Sled Track and the area referred to as Thunder Range serve as a baseline for future reference regarding non-radiological results in nearby soils. Furthermore, in the future, routine sampling for non-radiological parameters at fixed locations will be reduced, and more emphasis will be placed on sampling specific areas of interest with potential environmental impact. The total number of samples collected annually, however, should remain approximately the same. For a complete list of results, visit this Website for the SNL/NM 2007 ASER:

http://www.sandia.gov/news/publications/environmental/index.html

Echinucerus fendleri

Zinnia grandiflora

Ecological Surveillance

Puma at SNL/NM

Biota monitoring began in 1996 as an additional element of environmental monitoring within the Terrestrial Surveillance Program. The objectives of the Ecological Surveillance Program are to:

- Collect ecological resource inventory data to support site activities while preserving ecological resources and to maintain regulatory compliance,
- Collect information on plant and animal species present to further the understanding of ecological resources on-site,
- Collect biota contaminant data on an as needed basis in support of site projects and regulatory compliance,
- Assist Sandia organizations in complying with regulations and laws,
- Educate the Sandia community regarding ecological resource conservation, and
- Support line organizations with biological surveys in support of site activities.

The biota data collected are consistent with the requirements under DOE Order 450.1. Data are collected on mammal, reptile, amphibian, bird, and plant species that currently inhabit SNL/NM. Data collected include information on presence, abundance, species diversity, and land use patterns. Since no significantly elevated levels of radionuclides or metals were observed in soil or vegetation samples, no contaminant analysis of radionuclides and metals on wildlife were performed in 2007.

These data are primarily utilized to support NEPA documentation and land use decisions on a corporate level. Data also support wildlife communication campaigns to ensure safe work environments and sustainable decision making strategies. See Table 1 for common birds identified at KAFB.

Hummingbird at SNL/NM

BIRDS			
American robin	*Turdus migratorius*	Horned lark	*Eremophila alpestris*
American kestrel	*Falco sparverius*	Killdeer	*Charadrius vociferus*
Black-chinned hummingbird	*Archilochus alexandris*	Loggerhead shrike	*Lanius ludovicianus*
Black-headed grosbeak	*Pheucticus melanocephalus*	Mountain bluebird	*Sialia currucoides*
Broad-tailed hummingbird	*Selasphorus platycercus*	Red-tailed hawk	*Buteo jamaicensis*
Dark-eyed junco	*Junco hyemalis*	Rufous-sided towhee	*Pipiloerythro melanocephalus*

Table 1: Common Birds Identified at KAFB

Air Quality, Meteorological Monitoring & NESHAP

SNL/NM conducts air quality monitoring and surveillance under three programs: (1) the Clean Air Network (CAN) Program, (2) the Air Quality Compliance Program (AQC), and (3) the National Emission Standards for Hazardous Air Pollutants Program (NESHAP).

CAN

In 2007, data were collected from eight meteorological towers located throughout SNL/NM and KAFB. The data provided air dispersion and transport modeling information. Figure 4 shows some of the variations and extremes found in meteorological measurements.

Ambient Air Monitoring

Sandia measures ambient air quality at various locations throughout SNL/NM, and compares results with National Ambient Air Quality Standards (NAAQS) and local ambient air regulations. The network monitors criteria pollutants and volatile organic compounds. The ambient air surveillance data, collected from five locations, is utilized to establish background concentration levels for pollutants of concern and evaluate potential effects of Sandia's operations on air quality. In 2007, all results met National Ambient Air Quality Standards.

AQC

Air quality standards are implemented by regulations promulgated by local and federal governments in accordance with the Clean Air Act and the CAA Amendments of 1990. The Albuquerque Bernalillo County Air Quality Control Board, the State of New Mexico, and the EPA determine applicable air quality standards for non-radiological pollutants.

The AQC Program currently maintains 14 issued authority-to-construct (ATC) New Source Review (NSR) permits; and four issued NSR registrations from the City of Albuquerque. Currently, there is one ATC NSR permit and 11 NSR source registrations pending issuance with the City of Albuquerque. The AQC program and the City of Albuquerque are currently negotiating the consolidation of applicable permits and registrations into three sitewide permits—sitewide generators, sitewide boilers, and sitewide chemicals—so that management can more efficiently comply with permitting units. DOE/NNSA/SSO and Sandia have met the conditions of the permits and registrations.

NESHAP

Subpart H of NESHAP regulates radionuclide air emissions from DOE/NNSA facilities, with the exception of naturally occurring radon. In 2007, there were 15 SNL/NM facilities reporting NESHAP regulated emissions. Of these 15 sources, 14 were point sources and one a diffuse source. In 2007, the primary radionuclides released were tritium and argon-41. In 2007, the on-site maximally exposed individual (MEI) was located on KAFB. The MEI dose of 9.98E-04 millirems per year (mrem/yr) at the Chestnut Site resulted primarily from releases of tritium from the Annular Core Research Reactor in TA-V and the RMWMF in TA-III. The off-site MEI was located at the Eubank Gate Area. The MEI of 7.01E-04 mrem/yr at the Eubank Gate Area resulted primarily from releases of tritium from the Neutron Generator Facility in TA-I. Both doses are well below the 10 mrem/yr EPA standard.

Wind Speed

	Minimum (m/sec)	Maximum (m/sec)	Spread (m/sec)
• Average Annual Wind Speed	3.66 tower CL1	3.87 tower CW1 and SC1	0.21
• Greatest Difference in Wind Speed over 24 hours	7.3 tower KU1	11.9 tower A13	4.6 in April
• Greatest Difference in Daily Maximum Wind Speed	10.5 tower SC1 and A13	22.0 tower MW1	11.5 in July
• Average Difference in Daily Wind Speed	~1.0		

Temperature

	Minimum (°C)	Maximum (°C)	Spread (°C)
• Average Annual Temperature	13.65 tower SC1	14.35 tower A13	0.70
• Network Annual Temperature Extremes	-15.8 tower KU1	38.0 tower A13	53.8
• Greatest Difference in Daily Minimum Temperature	-15.8 tower KU1	-8.0 tower SC1	7.8 in Jan
• Greatest Difference in Average Daily Temperature	-7.8 tower A36	-1.9 tower SCI	5.9 in Jan
• Greatest Difference in Daily Maximum Temperature	5.4 tower CL1	10.4 tower CW1	5.0 in Jan

Precipitation

	Minimum (cm)	Maximum (cm)	Spread (cm)
• Annual Precipitation (Extremes)	18.77 tower A21	32.94 tower SC1	14.17
• Daily Rainfall Variation	.018 tower A21	3.40 tower A36 and SC1	3.22 in August
• Greatest Monthly Precipitation Difference	3.20 tower A21	9.40 tower SC1	6.20 in July
• Greatest in Monthly Rainfall occurred in August		9.40 tower SC1	

NOTE: Winter precipitation that falls as snow is underestimated (mostly at the SC1 tower). The precipitation at A21 in July and August is underestimated.

Figure 4: Variations and Extremes in Meteorological Measurements Across the Meteorological Tower Network in 2007

Coyote Springs at KAFB

Wastewater

Wastewater from SNL/NM is discharged from six on-site outfalls permitted by the Albuquerque Bernalillo County Water Utility Authority (ABCWUA). Wastewater monitoring is conducted to ensure that all discharges meet the standards set by the ABCWUA's publicly owned treatment works. In 2007, there were no reportable events, and all discharge parameters were met; this resulted in SNL/NM receiving six Gold Pre-Treatment Awards from the ABCWUA for 2006-2007. These awards are given based on a facility's 100 percent compliance with reporting requirements and discharge limits sent in its permits.

Surface Discharge

All water that will be discharged to the ground surface, either directly or to lined containments, must meet State of New Mexico surface discharge standards. In 2007, there were 22 internal requests made for individual discharges to the surface. All requests met the NMED and New Mexico Water Quality Control Commission standards, and were approved by Sandia. Additionally, routine surface discharges are made to two evaporation lagoons that service the Pulsed Power Facility under an existing discharge permit. During 2007, all permit requirements for both lagoons were met; however, there were three unplanned surface releases reported to NMED.

Storm Water Runoff

In FY 2007, the only analytical monitoring that was required under SNL/NM's National Pollutant Discharge Elimination System (NPDES) Multi-Sector General Permit for Storm Water Discharges Associated with Industrial Activities (Multi-Sector General) was for an annual fecal coliform analysis required by the State of New Mexico. The current NPDES permit requires that quarterly analytical sampling be conducted in the second and fourth year of the five-year permit, weather permitting. FY 2004 was the fourth year of the permit, and the last year that analytical monitoring was required. The permit also requires that visual observations be performed every quarter, weather permitting. No visual observations were collected for the first three quarters of FY 2007 due to the lack of adequate runoff during normal business hours. The permit was due for renewal in FY 2005, but the EPA did not issue a new permit and extended the current permit into 2007.

Students at Youth Conference

Teachers' Open House

SNL/NM's Environmental Outreach Program reaches out to the community at large. Presentations and information booths on local and national environmental issues and concerns are held at community centers, schools, environmental conferences, and on-site at SNL/NM. In 2007, Sandia participated in the New Mexico Museum of Natural History & Science "Teachers' Open House" and the New Mexico Environmental Health Conference in Albuquerque. Sandia's Environmental Outreach Program also attended public meetings and worked with community members to update the Community Checklist as part of the LTES Program.

Visit the LTES Website for more information:

http://ltes.sandia.gov

Sandia also cosponsors the annual Youth Conference on the Environment. Other sponsors included the Environmental Education Association of New Mexico, and the City of Albuquerque's South Broadway Cultural Center. The 2007 conference theme was "*Urban Environmental Issues*." During the day, students attended seminars about wildlife displacement, air quality, urban sprawl and mass transit. Students also attended a panel discussion that addressed the San Juan Chama Drinking Water Project that will begin supplying drinking water to Albuquerque.

During 2007, the Environmental Outreach Program also focused on "*in-reach*" to Sandia by holding the semi-annual awards ceremony and lecture series to recognize individuals or teams that demonstrated exemplary advancements contributing to Sandia's EMS vision. The Environmental Outreach Program also participated in SNL/NM's "*Take Your Daughters and Sons to Work Day*" and the "*Girl Scout Fair Play Camp*."

For additional information, please visit the Adventures in Science and Knowledge Website at:

http://www.sandia.gov/ciim/ASK/

Students signing in at the Youth Conference in April 2007