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SUPPLEMENTAL INFORMATION SOURCE DOCUMENT

WASTE MANAGEMENT

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Abstract

This Supplemental Information Source Document for Waste Management was prepared in support of future analyses including those that may be performed as part of the Sandia National Laboratories, New Mexico (SNL/NM) Site-Wide Environmental Impact Statement. This document presents information about waste management practices at SNL/NM, including definitions, inventory data, and an overview of current activities.

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ACRONYMS AND ABBREVIATIONS

6S	Sort, Simplify, Shine, Safety, Standardize, Sustain
AEA	Atomic Energy Act
AEC	Atomic Energy Commission
AHCF	Auxiliary Hot Cell Facility
AOC	Area of Concern
C&D	Construction and Demolition
CAC	Corrective Action Complete
CAMU	Corrective Action Management Unit
CARA	Concrete and Asphalt Recycling Area
CFR	Code of Federal Regulations
CWL	Chemical Waste Landfill
CY	Calendar Year
D&D	Decontamination and Decommissioning
DI	Deionized
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EA	Environmental Assessment
ECC	Environmental Compliance Coordinator
EMS	Environmental Management System
EOD	Explosives Ordnance Disposal
EPA	U.S. Environmental Protection Agency
EPEAT	Electronic Product Environmental Assessment Tool
EPP	Environmentally Preferable Purchasing
ER	Environmental Restoration
ES&H	Environment, Safety, and Health
FEC	Federal Electronics Challenge
FFCA	Federal Facilities Compliance Act
FFCO	Federal Facilities Compliance Order
gal.	gallon(s)
HSWA	Hazardous and Solid Waste Amendments
HWA	Hazardous Waste Act
HWMF	Hazardous Waste Management Facility
in.	inch(es)
IT	Information Technology
KAFB	Kirtland Air Force Base
kg	kilogram(s)
lbs	pounds
LDR	Land Disposal Restriction
LE	Landfill Excavation
LIHE	Light-Initiated High Explosive
LLW	Low-Level Waste
LTES	Long-Term Environmental Stewardship
LTS	Long-Term Stewardship
mg	milligram(s)

MLLW	Mixed Low-Level Waste
MSB	Manzano Storage Bunker
MTRU	Mixed Transuranic
NEW	Net Explosive Weight
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NNSA	National Nuclear Security Administration
OSRP	Off-Site Source Recovery Project
P2	Pollution Prevention
PCB	Polychlorinated biphenyl
PPE	Personal Protection Equipment
PPOA	Pollution Prevention Opportunity Assessments
RCRA	Resource Conservation and Recovery Act
RMWMF	Radioactive and Mixed Waste Management Facility
ROA	Recycling Opportunity Assessment
RWNMDD	Regulated Waste and Nuclear Materials Disposition Department
Sandia	Sandia Corporation
SASN	Silver Acetylide Silver Nitrate
SES	Sustainable Environmental Stewardship
SNL/NM	Sandia National Laboratories, New Mexico
SSO	Sandia Site Office
STP	Site Treatment Plan
SWA	Solid Waste Act
SWEIS	Site Wide Environmental Impact Statement
SWMU	Solid Waste Management Unit
SWTF	Solid Waste Transfer Facility
TA	Technical Area
TP	transportainer
TRU	Transuranic
TSCA	Toxic Substances Control Act
TSDF	Treatment, Storage, and Disposal Facility
TTF	Thermal Treatment Facility
U.S.	United States
VCM	Voluntary Corrective Measure
VE	Vapor Extraction
WDDR	Waste Description and Disposal Request
WIMS	Waste Information Management System
WIPP	Waste Isolation Pilot Plant
yr	year

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1. INTRODUCTION

This Supplemental Information Source Document for Waste Management was prepared in support of future analyses including those that may be performed as part of the Sandia National Laboratories, New Mexico (SNL/NM) Site-Wide Environmental Impact Statement (SWEIS).

1.1 Scope

This document presents information about waste management practices at SNL/NM, including definitions, inventory data, and an overview of current activities. Some historical information is also included, particularly with respect to volumes of waste generated and managed at SNL/NM.

The chapters in this document discuss the following topics:

- Overview of waste management (Chapter 2)
- Waste types and waste quantities (Chapter 3)
- Waste management facilities (Chapter 4)
- Pollution Prevention (P2) Program and waste minimization (Chapter 5)
- Packaging and transportation of waste (Chapter 6)
- Waste treatment and disposal (Chapter 7)
- Special issues, such as legacy waste (Chapter 8)

1.2 Applicable Federal Laws and Regulations

1.2.1 Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) was passed in 1976 to protect human health and the environment from the potential hazards of waste disposal, to conserve energy and natural resources, to reduce the amount of wastes generated, and to ensure wastes are managed in an environmentally sound manner. It replaced the Solid Waste Disposal Act of 1965.

Through RCRA, Congress directed the United States (U.S.) Environmental Protection Agency (EPA) to develop regulations for the generation, transportation, treatment, storage, and disposal of hazardous wastes and nonhazardous solid wastes. Facilities that generate hazardous wastes may accumulate the wastes for short periods of time but must meet extensive regulatory requirements for both the generation and accumulation activities. Facilities that treat, store, or dispose of hazardous wastes must comply with the regulations and must also obtain detailed and comprehensive permits.

The Hazardous and Solid Waste Amendments (HSWA) of 1984 amended and expanded RCRA. The HSWA provided specific requirements and deadlines for minimizing the quantity and toxicity of wastes placed in or on the land, specified requirements for corrective action at Solid Waste Management Units (SWMU) and Areas of Concern (AOC), and provided for regulation of underground storage tanks.

The Federal Facilities Compliance Act (FFCA) of 1992 amended RCRA; it provided both the EPA and state governments clear authority over federal facilities, including enforcement capabilities. It also provided a definition for mixed hazardous/radioactive waste and clarified compliance requirements.

The EPA regulations implementing RCRA requirements are codified in Title 40 of the Code of Federal Regulations (CFR), Parts 250–281. The EPA also authorizes states (including New Mexico) to regulate hazardous wastes and nonhazardous solid wastes through regulatory programs that are no less stringent than the federal program.

1.2.2 P2 Act

The P2 Act was passed in 1990 to establish a focus on reducing and preventing pollution through cost-effective changes in production, operations, and raw materials and by reducing the use of energy, water, and natural resources.

1.2.3 Atomic Energy Act

The Atomic Energy Act (AEA) was passed in 1946; it directed the formation of the Atomic Energy Commission (AEC) and established government control of nuclear materials and weapons. It was amended in 1954 to promote development of atomic energy and research, development, and use of nuclear materials. The U.S. Department of Energy (DOE), as successor agency to the AEC, maintains jurisdiction over source, by-products, or special nuclear materials at DOE facilities.

Under the authority of the AEA, the DOE has issued regulations and directives governing management of nuclear materials and radioactive wastes. Specifically, directives for radioactive wastes are specified in DOE Order 435.1 Change 1, *Radioactive Waste Management* (DOE 2001a); DOE Order M 435.1-1 Change 1, *Radioactive Waste Management Manual* (DOE 2001b); and DOE Order G 435.1-1, *Implementation Guide for Use with DOE M 435.1-1* (DOE 1998).

1.3 Applicable New Mexico Laws and Regulations

1.3.1 Hazardous Waste Act (HWA)

The HWA was passed in 1977 to help ensure maintenance of the quality of New Mexico's health and environment. It specifies that provisions of the HWA are applicable to activities and substances subject to the AEA only to the extent that they are not inconsistent with the AEA requirements.

The HWA authorizes the Environmental Improvement Board to develop regulations implementing the HWA. The New Mexico regulations are contained in Title 20, Chapter 4 of the New Mexico Administrative Code (NMAC) and are enforced by the New Mexico Environment Department (NMED).

The regulations in 20.4.1 NMAC mirror the federal regulations implementing RCRA. The NMED has been authorized by the EPA to administer and enforce the hazardous waste program in New Mexico.

1.3.2 Solid Waste Act (SWA)

The SWA was passed in 1990 to establish a comprehensive solid waste management program and to conserve, recover, and recycle resources. The SWA authorizes the Environmental Improvement Board to develop a comprehensive plan and regulations implementing the SWA. The New Mexico regulations are contained in 20.9 NMAC and are enforced by the NMED.

1.3.3 Hazardous Waste Permit

Hazardous waste permits for existing facilities are issued in two stages: (1) interim status from submittal of a "Part A" application, and (2) a hazardous waste permit from submittal of a "Part B" application. Part A applications contain brief information about the hazardous waste management activities and facilities, require that the owner and operator meet certain regulatory requirements, and require that the owner and operator apply for a hazardous waste permit. Part B applications include detailed and comprehensive specifications for the hazardous waste management activities and facilities and also include requirements for corrective action (under HSWA) at SWMUs and AOCs. The permitting process typically takes several years and includes opportunities for public input before the initial application is submitted and after the draft permit is issued.

Sandia Corporation (Sandia), a wholly owned subsidiary of Lockheed Martin Corporation, manages and operates SNL/NM for the DOE / National Nuclear Security Administration (NNSA). Sandia and the DOE have several interim status facilities and several hazardous waste permits, including a HSWA module for corrective action (NMED 2009a, 2009b, and 2009c). All of the hazardous waste permits for SNL/NM have expired. The DOE/NNSA Sandia Site Office (SSO) and Sandia have applied for renewal of the permits (SNL/NM 2009a), and the expired permits remain in effect until a new permit is issued or denied.

1.3.4 Federal Facilities Compliance Order (FFCO)

When the FFCA was enacted in 1992, it clarified regulatory requirements applicable to the hazardous portion of mixed wastes. SNL/NM and other DOE facilities with mixed waste were out of compliance with the regulatory requirement to treat the waste within one year to meet the applicable treatment standards for the hazardous waste constituents and/or characteristics. In October 1995, the NMED, DOE, and Sandia signed the FFCO to address compliance for mixed waste at SNL/NM (NMED 2004a). Under the FFCO, the DOE and Sandia are required to maintain a Site Treatment Plan (STP); it contains an inventory of mixed waste subject to the FFCO at SNL/NM, with a plan and schedule for treating the waste and achieving compliance with applicable hazardous waste regulatory requirements (NMED 2008a). The DOE and Sandia update the STP annually to reflect changes in the inventory (SNL/NM 2009b).

1.3.5 Compliance Order on Consent

In April 2004, the DOE, Sandia, and the NMED entered into a Compliance Order on Consent (the Order) (NMED 2004b) regarding corrective action for releases of contaminants at SWMUs

and AOCs at SNL/NM. Under the Order, the DOE/NNSA/SSO and Sandia are required to determine the nature and extent of releases, identify alternatives for corrective measures, and implement the corrective measures approved by the NMED. The Order does not apply to radionuclides or the radioactive portion of mixed wastes.

After corrective measures are completed under the Order, the DOE and Sandia request a modification of the HSWA module in the hazardous waste permit to note the completion. The changes are reflected in two lists. One list shows the sites requiring corrective action, and the other lists sites where corrective action has been completed (NMED 2008b). Some sites require continuing controls and monitoring after corrective action is complete.

2. OVERVIEW OF WASTE MANAGEMENT

2.1 Waste Management System

Wastes are generated throughout SNL/NM during daily activities. Categories or types of wastes are described in this chapter. Quantities are described in Chapter 3, and waste management facilities at SNL/NM are described in Chapter 4.

General waste management activities include minimizing waste quantity and toxicity, generating the waste, accumulating it, characterizing it, transferring it to one of the on-site management facilities, processing it, and transporting it to an off-site facility for further processing or disposal.

Most of the waste management facilities at SNL/NM are operated by members of the Regulated Waste and Nuclear Material Disposition Department (RWNMDD) with the following mission statement (2009):

> Develop, maintain, and support the implementation of a corporate waste management system in which all employees recognize and fulfill their responsibilities to manage all waste products properly and in full compliance with the regulations, by providing exemplary service in waste collection, storage, treatment, packaging, shipping, disposal, policy communication, and training. Our goal is to support the waste management needs of the laboratories' programs through close collaboration and regular communication.

Some waste management facilities are specific to certain SNL/NM activities or wastes; these are operated by members of the organizations where the wastes are generated.

The general approach to waste characterization at SNL/NM is based on use of existing information regarding the chemical and physical nature of the waste or waste stream and the activities that generated it, supplemented by data from sampling and analysis as needed. Waste characterization at SNL/NM is a collaborative effort between the individuals involved with the generation of the waste and personnel at the waste management units (SNL/NM 2009a).

Wastes are generated throughout SNL/NM, and are initially accumulated at or near the locations where they are generated. Waste items and containers of waste are segregated and labeled.

After the waste is accepted at one or more of the waste management facilities, it is managed in accordance with the requirements applicable to the specific waste. The processes at SNL/NM waste management facilities vary according to the specific waste type but generally incorporate one or more of the following tasks in preparation for ultimate shipment to off-site facilities for recycling, treatment, or disposal:

- Screening
- Sorting

- Treatment
- Storage
- Repackaging

2.2 Categories of Waste

The general categories of waste generated at SNL/NM are as follows:

- Solid waste, including special waste and industrial solid waste
- RCRA-regulated hazardous waste
- Toxic Substances Control Act (TSCA)-regulated waste
- Radioactive waste (including low-level waste [LLW] and transuranic [TRU] waste)
- Mixed hazardous/radioactive waste (including mixed low-level waste [MLLW] and mixed transuranic [MTRU] waste)

Table 2-1 lists these categories and provides the regulatory definitions and examples of SNL/NM-generated wastes.

Table 2-1. Types of Waste Generated at SNL/NM

Waste Category	Definition[a]	SNL/NM Examples
Solid Waste	*"Solid waste" means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, construction, demolition, and agricultural operations and from community activities, but does not include:* *(a) drilling fluids. . . ;* *(b) fly ash waste. . . ;* *(c) waste from the extraction, beneficiation, and processing of ores and minerals. . . ;* *(d) agricultural waste. . . ;* *(e) cement kiln dust waste;* *(f) sand and gravel;* *(g) solid or dissolved material in domestic sewage. . . ;* *(h) source, special nuclear or by-product material. . . ;* *(i) densified-refuse-derived fuel;* *(j) any material regulated by Subtitle C or Subtitle I of RCRA. . . :* *(k) substances other than asbestos regulated by the Federal Toxic Substances Control Act, 15 U.S.C. Sections 2601, et seq., as amended;* *(l) radioactive waste;* *(m) whole or processed scrap tires. . . ;* *(n) any recyclable material in transit or temporary storage;* *(o) compost; or* *(p) materials, other than those that are regulated as hazardous, toxic or special waste. . .* (excerpts from 20.9.2.7 NMAC)	Commercial solid waste, predominantly office and laboratory trash and C&D waste/debris.
Special Waste	*"Asbestos waste" means a solid waste that contains more than 1 percent asbestos:* *(a) "friable asbestos material". . .;* *(b) "category I non-friable asbestos containing material" . . . ;* *(c) "category II non-friable asbestos containing material" . . . ;* *(d) "regulated asbestos waste". . .* (excerpts from 20.9.2.7 NMAC)	Asbestos-containing waste from construction, D&D, and demolition activities.

Table 2-1. Types of Waste Generated at SNL/NM (Continued)

Waste Category	Regulatory Definition[a]	SNL/NM Examples
Special Waste	*"Infectious waste" means a solid waste that carries a probable risk of transmitting disease to humans or animals, and includes the following which shall be considered infectious waste:* *(a) cultures and stocks of infectious agents and associated biologicals. . . ;* *(b) human pathological wastes. . . ;* *(c) human and body fluid waste, including:* *(i) liquid waste human blood;* *(ii) blood products;* *(iii) items with human blood. . . ;* *(iv) items with human blood, including serum, plasma, and other blood components. . . ;* *(v) intravenous bags that have been used for blood transfusions;* *(vi) items, including dialysate. . . ;* *(vii) items contaminated by body fluids. . . ;* *(viii) specimens of blood products, and their containers; and* *(ix) other potentially infectious materials as defined by the U.S. Department of Labor Occupational Safety and Health Administration at 29 CFR 1910.1030(b). . . ;* *(d) contaminated animal carcasses. . . ;* *(e) biological wastes and waste contaminated with bloody excretions, exudates, or secretions from:* *(i) humans who are isolated to protect others from rare disease. . . ;* *(ii) isolated animals known or suspected to be infected with rare diseases. . . ;* *(f) discarded sharps, used or unused (unless in original packaging. . .);* *(g) infectious waste does not include:* *(i) wastes generated in a household. . . ;* *(ii) human corpses. . . ;* *(iii) etiological agents being transported for purposes other than waste processing or disposal. . . ;* *(iv) reusable or recyclable containers. . . ;* *(v) soiled diapers that do not contain materials identified as infectious waste;* *(vi) body excretions. . . ;* *(vii) used or unused syringes that have not come into contact with human blood or other bodily fluids or infectious agents and do not have a needle attached.* (excerpts from 20.9.2.7 NMAC)	Medical waste produced in the main and satellite medical clinics and emergency care sites. Animal waste (e.g., rodent droppings) suspected of containing infectious agents, and animal waste produced in infrequent experiments. Infectious waste is generated at some research laboratories.

Table 2-1. Types of Waste Generated at SNL/NM (Continued)

Waste Category	Regulatory Definition[a]	SNL/NM Examples
Special Waste	*"Special waste" means solid waste that has unique handling, transportation, or disposal requirements to assure protection of the environment and the public health, welfare, and safety, including:* *(a) treated formerly characteristic hazardous wastes;* *(b) packing house and killing plant offal;* *(c) regulated asbestos waste;* *(d) ash;* *(e) infectious waste;* *(f) sludge, except; sludge that is land applied under 40 CFR Part 503 as intermediate or final cover at a landfill and meets the requirements of Subpart B of 40 CFR Part 503;* *(g) industrial solid waste that, unless specially handled or disposed, may harm the environment or endanger the public health or safety;* *(h) spill of a chemical substance or commercial product that, unless specially handled or disposed, may harm the environment or endanger the public health or safety; and* *(i) petroleum contaminated soils that have a sum of benzene, toluene, ethylbenzene, and xylene isomer concentrations of greater than 50 mg/kg, or benzene individually greater than 10 mg/kg, or a total petroleum hydrocarbon concentration of greater than 100 mg/kg.* (from 20.9.2.7 NMAC)	Special wastes generated during design, development, and testing of weapon systems and components; material research; pulsed power research; reactor safety research; support activities; RCRA corrective action activities, and D&D activities. Sandia also accepts small volumes of special waste for processing from its operations at facilities outside SNL/NM.
Industrial Solid Waste	*"Industrial solid waste" means solid waste generated by manufacturing or industrial processes that is not hazardous waste regulated under Subtitle C of RCRA. Such waste may include, but is not limited to, waste resulting from the following processes: electric power generation; fertilizer / agricultural chemicals; food and related products/by-products; inorganic chemicals; iron and steel manufacturing; leather and leather products; nonferrous metals manufacturing/foundries; organic chemicals, plastics and resins manufacturing; pulp and paper industry; rubber and miscellaneous plastic products; stone, glass, clay, and concrete products; textile manufacturing; transportation equipment, and water treatment. This term does not include mining waste or commercial solid waste.* (from 20.9.2.7 NMAC)	Industrial solid wastes generated during design, development, and testing of weapon systems and components; material research; pulsed power research; reactor safety research; support activities; RCRA corrective action activities, and D&D activities. Sandia also accepts small volumes of industrial solid waste for processing from its operations at facilities outside SNL/NM.
TSCA-Regulated Waste	Waste that is identified in 40 CFR 761.	Transformers and equipment containing PCBs.

Table 2-1. Types of Waste Generated at SNL/NM (Continued)

Waste Category	Regulatory Definition[a]	SNL/NM Examples
Solid Waste	*Engineered nanoscale particles (including their agglomerates and aggregates) that could reasonably be expected to be released either directly or from a matrix, becoming separately mobile and a potential source of exposure. Engineered nanoscale particles in a matrix-free state, a liquid or sol-gel matrix, or friable matrix constitute examples of UNP. Engineered nanoscale particles immobilized within a solid matrix (e.g., polycarbonate) are bound engineered nanoscale particles not UNP. Note that destructive activities (e.g., machining, abrasion, destructive testing) may have the potential to liberate bound engineered nanoscale particles resulting in UNP.* (from Sandia Corporate Dictionary, Integrated Laboratory Management System)	Small volumes of nanoscale wastes produced in research laboratories.
Hazardous Waste	Waste meeting the definition of hazardous waste in 40 CFR 261.	Hazardous wastes generated during design, development, and testing of weapon systems and components; material research; pulsed power research; reactor safety research; support activities; RCRA corrective action activities, and D&D activities. Sandia also accepts small volumes of hazardous waste for processing from its operations at facilities outside SNL/NM.
Radioactive Waste	*Any garbage, refuse, sludges, and other discarded material, including solid, liquid, semisolid, or contained gaseous material that must be managed for its radioactive content. [Adapted from 40 CFR Part 240* (from DOE M 435.1-1, Attachment 1.)	
Transuranic Radioactive Waste	*Transuranic waste is radioactive waste containing more than 100 nanocuries (3,700 becquerels) of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years, except for:* *(1) High-level radioactive waste;* *(2) Waste that the Secretary of Energy has determined, with the concurrence of the Administrator of the U.S. Environmental Protection Agency, does not need the degree of isolation required by the 40 CFR Part 191 disposal regulations; or* *(3) Waste that the Nuclear Regulatory Commission has approved for disposal on a case-by-case basis in accordance with 10 CFR Part 61.* (from DOE G 435.1-1 Chapter 3)	Sealed radioactive sources and other radioactive and radioactively-contaminated items.

Table 2-1. Types of Waste Generated at SNL/NM (Concluded)

Waste Category	Regulatory Definition[a]	SNL/NM Examples
Low-Level Radioactive Waste	*Low-level radioactive waste is radioactive waste that is not high-level radioactive waste, spent nuclear fuel, transuranic waste, by-product material (as defined in section 11e.(2) of the Atomic Energy Act of 1954, as amended), or naturally occurring radioactive material.* (from DOE M 435.1-1, Attachment 1)	Produced in laboratory experiments, component tests, and general activitiesat SNL/NM. Sandia also accepts small volumes of LLW for processing from its operations at facilities outside SNL/NM.
Transuranic and Low-Level Mixed Waste	*Waste determined to contain both source, special nuclear, or by-product material subject to the Atomic Energy Act of 1954, as amended, and a hazardous component subject to the Resource Conservation and Recovery Act.* (from DOE M 435.1-1, Attachment 1) (**Note:** Mixed waste may have the radiological nature of either TRU or LLW.)	Radioactively-contaminated items and materials, manufactured items with radioactive and hazardous constituents, and chemically-contaminated radioactive components. (**Note:** Small amounts of mixed waste generated at Sandia National Laboratories, California, have been shipped to SNL/NM under the FFCO discussed in Chapter 1.)

[a]*Text in italics is a direct quote from the defining source.*

C&D = Construction and demolition.
CFR = Code of Federal Regulations.
D&D = Decontamination and Decommissioning.
DOE = U.S. Department of Energy.
FFCO = Federal Facilities Compliance Order.
LLW = Low Level Waste.
mg/kg = Milligram(s)/kilogram.
NMAC = New Mexico Administrative Code.
PCB = Polychlorinated biphenyl.
RCRA = Resource Conservation and Recovery Act.
Sandia = Sandia Corporation.
SNL/NM = Sandia National Laboratories, New Mexico.
TRU = Transuranic.
TSCA = Toxic Substances Control Act.
UNP = Unbound, Engineered Nanoscale Particle.
U.S.C. = United States Code.

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3. WASTE STREAMS AND INVENTORIES

While commercial, large-scale industries may generate continuous and uniform types of waste, this is not the case at SNL/NM. Because SNL/NM is a research facility, most of the waste is the result of experimental work, with many individual, one-time types of wastes. In addition, support facilities (i.e., Fleet Services, Industrial Hygiene Analytical Chemistry, Radiation Protection Sample Diagnostics, and Reapplication Services) generate consistent and routine types of waste.

This section describes the waste characterization process and summarizes inventories for hazardous, radioactive, and solid wastes. The historical data presented herein represent recent history at SNL/NM. Inventory data were compiled from existing data and presented in the units (e.g., cubic feet, kilograms [kg], or metric tons) in which the data are available. No conversion factors were applied to present all the data sets in the same units, because such conversions would have to be based on assumptions that may not be valid (e.g., the assumption that density is constant for all the wastes).

3.1 Waste Characterization

As noted in Section 2.1, the approach to waste characterization at SNL/NM is based on use of existing information regarding the chemical and physical nature of the waste and the activities that generated it, supplemented by data from sampling and analysis as needed. The approach is also a collaborative effort between the individuals involved with generation of the waste and personnel at the waste management facilities.

3.1.1 Waste Characterization Objectives

In general, waste is characterized to achieve the following objectives:

- Adequately describe the waste.
- Determine the appropriate on-site handling methods.
- Determine the packaging requirements for safe transportation on site.
- Determine whether the waste has properties that require special management at the on-site waste management facilities (e.g., chemical incompatibility, potential for harm to human health or the environment).
- Determine whether the waste is subject to specific regulatory requirements (e.g., requirements for hazardous or radioactive waste).
- Determine whether treatment is needed at one of the on-site waste management units.
- Determine whether the waste is acceptable for management (treatment, storage, and/or disposal) at an off-site facility.
- Provide adequate information to the off-site facility so it can determine whether to accept the waste.
- Determine the packaging requirements for safe transportation to the selected off-site facily.
- Obtain information for reports of waste generation and management that are submitted to the DOE, NMED, and other regulatory agencies as required.

- Obtain information for future P2 and waste minimization activities.
- Obtain information regarding recycling and waste management costs associated with the waste.

3.1.2 Waste Characterization Process

The waste characterization process varies according to the type of waste (i.e., specific requirements are defined for radioactive or hazardous wastes); however, the general process is as follows. The initial generator assembles information about the waste and submits it to waste management personnel. The initial information is supplemented as needed in a collaborative effort until waste management personnel have sufficient information to accurately characterize the waste to meet the objectives listed in Section 3.2.1. The information is disposal requests or equivalent forms and is retained at SNL/NM.

3.1.3 Chemical Waste Characterization

The chemical waste characterization process is used for the following waste types (Table 2-1):

- Special Waste (other than asbestos waste)
- Industrial Solid Waste
- Infectious/Biological/Medical Waste
- UNP waste
- TSCA-Regulated waste
- Hazardous Waste
- Mixed LLW and MTRU waste

The waste information assembled during characterization includes any of the following details as necessary:

- Quantity
- Physical form of the waste (e.g., solid, liquid, gas, wastewater)
- Origin and source (e.g., research and development, spill cleanup)
- Waste characteristics and components (e.g., ignitability, corrosivity, hazardous constituents)

The initial generators at SNL/NM label containers when wastes are first placed in them and provide the information in a disposal request that is reviewed by personnel at the on-site waste management facility before the waste is transported to the facility. If the information is not adequate, the waste management reviewer requests additional information from the waste generator or recommends sampling and analysis of the waste, and the information in the disposal request is supplemented as needed. Waste management personnel visually check to verify that the waste and information on the label matches the information on the disposal request prior to transporting the waste.

After the waste is received at the waste management facility, personnel continue to obtain additional information as required for shipment to off-site treatment, storage, and disposal

facilities (TSDF). The waste acceptance and approval process varies for different facilities but typically involves the following documentation:

- Potential shipments' physical characteristics (e.g., liquids, solids, or gases)
- Regulated constituents (e.g., waste codes)
- Packaging (e.g., drums, boxes, or laboratory-packed small vials)
- Transportation methods (e.g., truck versus rail)
- Analytical data for confirmation of initial characterization

The receiving facility has the responsibility to ensure that the waste received is consistent with the descriptions and documentation of the waste approved to be shipped. The receiving facility or its regulator can hold shipments until confirmation is approved or refuse to accept shipments if the information is inadequate.

After the receiving site is approved and the waste is preapproved for acceptance by the site, it is packaged, labeled, and placarded as appropriate for transport to meet all U.S. Department of Transportation (DOT) requirements. The shipments are accompanied by a uniform hazardous waste manifest and Land Disposal Restriction (LDR) certifications, as needed.

Signed manifests representing receipts for waste received are returned to SNL/NM from the off-site facility to document the transfer of the waste. The records, which include these documents, are maintained at SNL/NM. Records for hazardous wastes are available for inspection by the NMED in accordance with hazardous waste management regulations.

3.1.4 Radioactive Waste Characterization

The radioactive waste characterization process is used for the following waste types (Table 2-1):

- LLW
- TRU
- Mixed LLW and MTRU

The waste information assembled during characterization includes any of the following details as necessary:

- Quantity
- Physical form of the waste (e.g., solid, liquid, gas)
- Origin and source (e.g., research and development, spill cleanup)
- Waste characteristics and components (e.g., radionuclides, hazardous constituents, and other components)

The initial generators at SNL/NM label containers when wastes are first placed in them and provide information about the waste on a disposal request that is reviewed by personnel at the on-site waste management facility before the waste is transported to the facility. If the information is not adequate, the waste management reviewer requests additional information

from the waste generator or recommends sampling and analysis of the waste, and the information in the disposal request is supplemented as needed. If sampling and analysis is necessary, waste management personnel work with the generator to ensure that the data are adequate for waste management requirements. Waste management personnel visually check to verify that the waste and information on the label matches the information on the disposal request prior to transporting the waste from the initial generator.

After the waste is received at the waste management facility, personnel continue to obtain additional information as required for on-site treatment and/or shipment to off-site TSDFs, and to assure the waste, when shipped to the TSDF, has been adequately characterized, is consistent with the waste stream description preapproved by the off-site facility, and no prohibited materials have been added during accumulation or storage. The waste acceptance and approval process varies for different facilities but typically involves the following documentation:

- Potential shipments' physical characteristics (e.g., liquids, solids, or gases)
- Nature and characteristics of radionuclides present in the waste
- Hazardous constituents (e.g., hazardous waste codes), as appropriate
- Packaging (e.g., drums, boxes, or laboratory-packed small vials)
- Transportation methods (e.g., truck versus rail)
- Analytical data for confirmation of initial characterization

The receiving facility has the responsibility to ensure that the waste received is consistent with the descriptions and documentation of the waste approved to be shipped. The receiving facility or its regulator can hold shipments until confirmation is approved or refuse to accept shipments if the information is inadequate.

After the receiving site is approved and the waste is preapproved for acceptance by the site, it is packaged, labeled, and placarded as appropriate for transport to meet all DOT requirements. The shipments are accompanied by a uniform hazardous waste manifest and LDR certifications, as needed.

Signed manifests representing receipt for waste received are returned to SNL/NM from the off-site facility to document the transfer of the waste. The records, which include these documents, are maintained at SNL/NM. Records for hazardous wastes are available for inspection by the NMED in accordance with hazardous waste management regulations.

3.1.5 Solid Waste Screening

Office trash is collected by the custodial staff on a regular basis. Individual disposal requests are not completed for solid waste. Solid waste handled in this manner does not include putrescible waste from cafeteria operations, which is collected from SNL/NM generation points (e.g., Thunderbird Café) and is directly transported to a landfill for disposal.

Collected solid waste is placed in dumpsters that are picked up regularly and transported to the Solid Waste Transfer Facility (SWTF) at SNL/NM. Recyclables, collected in separate

containers, are processed on days separate from trash and baled and staged until sufficient quantities are accumulated for shipping to a recycling vendor.

The following items are not allowed in the solid waste dumpsters:

- Putrescible food wastes from cafeteria operations
- Wood (may be reapplied or recycled)
- Metal (may be recycled)
- Cardboard (may be recycled)
- Construction and demolition debris (managed separately)
- Liquids and/or sludges
- Powders (may be regulated as hazardous)
- Radioactive material or radioactively contaminated waste
- Hazardous waste as defined in RCRA (40 CFR 261)
- Asbestos-containing materials
- TSCA wastes (polychlorinated biphenyls)
- Special wastes as defined in 20.9 NMAC
- Labels or markings that indicate the presence of a hazard that is prohibited from management as solid waste (e.g., "Radioactive Waste," "Mixed Waste," "Radioactive," "Bio-Hazard")
- Batteries, except that carbon zinc or alkaline size AAA to D and 9-Volt batteries are allowed
- Explosives (to include live ammunition)
- Household waste
- Pressurized containers

After solid waste is collected in the dumpsters and transferred to the SWTF, it is screened for the materials and wastes listed. Recyclable materials and potentially hazardous materials and wastes are removed from the trash and managed through processes appropriate to each material or waste.

Screening the solid waste serves to protect workers and the environment from potential hazards or impacts and ensures compliance with regulations and Sandia contractual obligations to the transporters of solid waste and the landfills that are the final recipients. The waste acceptance criteria for solid waste are established by the destination facility, usually a landfill or recycling center.

3.2 Waste Generation and Waste Quantities (1999 to 2009)

This section presents historical data for Calendar Year (CY) 1999 through CY 2009. The data provide a perspective and context for the more detailed information discussed in Section 4.2 for the specific SNL/NM waste management facilities.

3.2.1 Historical Hazardous Waste Generation

Table 3-1 summarizes data for waste amounts accepted at the Hazardous Waste Management Facility (HWMF) for CY 1999 to CY 2009. The RCRA wastes generated by the Environmental Restoration (ER) and Decontamination and Decommissioning (D&D) Projects are considered non-routine wastes as these are generated outside of normal laboratory and office operations, as described following Table 3-1.

Large quantities of non-routine hazardous and TSCA wastes are attributable to major ER and D&D Projects (2002-2006; 2008-2009). Large quantities of routine hazardous wastes in 2004 and 2005 are attributable to reductions in chemical inventories associated with relocating numerous laboratories.

The total hazardous waste quantity of all hazardous waste codes specified in Permit NM5890110518-1 (NMED 2009a) is 585,925 kg per year. This number represents the maximum quantity of hazardous waste that could be generated if the maximum quantity of each waste code in the permit were generated. This number does not take into account the nonhazardous waste amounts that could also be generated and managed by the HWMF.

Table 3-1. Chemical Waste Generated at SNL/NM – CY 1999 to CY 2009

Accepted at HWMF	RCRA[a]		TSCA[a,d]		Other Chemical Waste[a,e]	
	Routine[b]	Non-Routine[c]	Routine[b]	Non-Routine[c]	Routine[b]	Non-Routine[c]
1999	38,358	Not available	267	Not available	Not available	Not available
2000	27,541	36,248	491	31,590	Not available	Not available
2001	24,867	23,044	15	3,816	Not available	Not available
2002	25,375	6,117	0	2,752	Not available	Not available
2003	38,447	209,361	8	6,224	Not available	Not available
2004	241,597	8	NA	13,524	479,143	251,754
2005	214,410	336,045	NA	6,461	316,239	351,976
2006	71,693	1,066	NA	73,086	616,402	209,737
2007	55,143	547	NA	9,013	271,332	77,146
2008	45,372	555	NA	7,800	259,478	158,330
2009	77,166	378	NA	1,959	167,731	185,672

[a]*Quantities are in kilograms.*

[b]*Routine waste is generated from ongoing laboratory operations.*

[c]*Non-routine waste is generated by the Environmental Restoration Project, Decontamination & Decommissioning activities, and other cleanup or one-time activities.*

[d]*Since the end of CY 2003, all TSCA waste has been classified as non-routine wastes.*

[e]*Other Chemical Waste includes special waste and industrial solid waste.*

CY = Calendar Year.

HWMF = Hazardous Waste Management Facility.

NA = Not Applicable.

RCRA = Resource Conservation and Recovery Act.

SNL/NM = Sandia National Laboratories, New Mexico.

TSCA = Toxic Substances Control Act.

Routine waste generation pertains to those activities, processes, and operations that occur as part of the standard operations of conducting business at SNL/NM. Variations in routine waste generation rates may be attributable to the startup and close-out of projects and the moving of laboratories from one building to another. The following waste-generating sources are considered to be "routine" :

- Research, Development, and Testing (all associated materials, personal protective equipment [PPE])
- Maintenance
- Unused (Residual) Chemical

Waste generation values for non-routine operations vary according to the projects each year. The following waste-generating situations are considered to be "non-routine" :

- Unused (unopened) chemicals
- ER (now Long-Term Environmental Stewardship [LTES]) projects
- Spill cleanups (including any materials, PPE, etc., associated with spill cleanups)
- "Cleanouts" of laboratory areas, warehouses, or other storage areas or facilities
- All TSCA waste
- Construction projects
- D&D projects

3.2.2 Historical Radioactive Waste Generation

Table 3-2 summarizes data for both non-routine and routine radioactive waste generated during CY 1999 to CY 2009 for LLW and MLLW.

Table 3-2. Radioactive Waste Generated at SNL/NM – CY 1999 to CY 2009

Radioactive Waste Generated	Routine LLW[a,b]	Non-Routine LLW[a,c]	Routine MLLW[a,b]	Non-Routine MLLW[a,c]
1999	5,598	4,482	4	5,216
2000	353	10,936	4	1,114
2001	3,490	283,229	849	10,611
2002	4,594	15,063	1,100	1,565
2003	3,326	40,715	1,169	8,887
2004	6,510	36,936	6,591	93,921
2005	4,732	29,458	280	65,746
2006	5,338	11,512	925	8,651
2007	2,670	16,349	437	3,787
2008	5,154	8,545	1,201	4,406
2009	4,851	1,124	1,008	668

[a] *All quantities are in kilograms.*

[b] *Routine waste is generated from ongoing laboratory operations.*

[c] *Non-routine waste is generated by Environmental Restoration Project, Decontamination and Decommissioning Projects, and other cleanup activities.*

CY = Calendar Year.

LLW = Low Level Waste.

MLLW = Mixed LLW.

SNL/NM = Sandia National Laboratories, New Mexico.

Large quantities of radioactive waste are attributable to major ER and D&D Projects (2004 and 2005) and to ongoing efforts to reduce the inventory of legacy LLW at SNL/NM (2004 and 2006). As noted in Section 6.3, large quantities of hazardous wastes were generated in 2005 during ER activities. Much of the large quantity of mixed wastes shipped to off-site TSDFs in 2005 was also associated with ER activities. Laboratory-generated radioactive waste volumes have been showing a decreasing trend.

The quantities of radioactive waste stored at SNL/NM in May 2010 are shown in Appendix A.

3.2.3 Historical Solid Waste Generation

The predominant sources of solid waste at SNL/NM are laboratory or office trash and construction and demolition (C&D) waste and debris. The recent average annual solid waste generation at SNL/NM is approximately 4,100 metric tons. Table 3-3 presents quantities of waste generated and recycled during the historical period of CY 1999 through CY 2009 (McCord 2010).

Table 3-3. SNL/NM Solid Waste Generation/Recycling Quantities – CY 1999 to CY 2009

Calendar Year	Routine Waste Sent to Landfill[a,b]	Non-Routine Waste Sent to Landfill[a,c,d]	White Paper Recycled[a]	Cardboard Recycled[a]	Concrete and Asphalt Recycled[a,d]
1999	3,332	10,130	116	127	NA
2000	3,053	16,513	122	136	NA
2001	2,546	9,822	102	145	NA
2002	1,397	21,467	94	177	NA
2003	1,443	10,920	99	203	NA
2004	1,439	30,778	103	233	NA
2005	1,255	17,857	81	269	4,219
2006	1,207	13,287	82	232	2,650
2007	1,277	2,558	92	192	6,805
2008	983	4,358	70	204	6,883
2009	894	2,106	66	174	17,060

[a]Values are in metric tons.

[b]Routine waste is generated from ongoing laboratory operations and includes putrescible food wastes from cafeteria operations.

[c]Non-Routine waste is generated by the Environmental Restoration Project, construction and demolition projects, and other cleanup activities.

[d]Since 2005, Sandia Corporation has recycled concrete and asphalt by processing it and using it in roads at SNL/NM.

CY = Calendar Year.

NA = Not applicable.

SNL/NM = Sandia National Laboratories, New Mexico.

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4. WASTE MANAGEMENT FACILITIES

4.1 Overview of Waste Management Facilities

Waste at SNL/NM is currently managed at several designated facilities listed in Table 4-1. There are several storage facilities, some waste treatment facilities, two disposal facilities, and numerous SWMUs undergoing corrective action or long-term stewardship at SNL/NM. The waste management facilities at SNL/NM vary in size, capacity, and scope of operations, depending on the waste types for which they are designed. Table 4-1 summarizes the waste management facilities at SNL/NM.

Table 4-1. Summary of SNL/NM Waste Management Facilities

Facilities for Specific Waste Types	Waste Management Activity						
	Characterization	Screening or Sorting and Repackaging	Storage	Treatment	Long-Term Containment	Disposal	Closure and Post-Closure Care
Hazardous Waste	HWMF	HWMF	HWMF	TTF	CAMU	NA	CWL CAMU
MLLW	RMWMF AHCF	RMWMF AHCF	RMWMF AHCF 5 MSB	RMWMF AHCF	NA	NA	NA
MTRU	RMWMF AHCF	RMWMF AHCF	RMWMF AHCF 5 MSB	RMWMF AHCF	NA	NA	NA
Radioactive LLW	RMWMF AHCF	RMWMF AHCF	RMWMF AHCF 7 MSB	RMWMF AHCF	NA	NA	NA
Radioactive TRU	RMWMF AHCF	RMWMF AHCF	RMWMF AHCF 7 MSB	RMWMF AHCF	NA	NA	NA
Solid Waste	SWTF HWMF	SWTF HWMF	SWTF HWMF	NA	CAMU	NA	Classified Waste Landfill CWL CAMU

AHCF = Auxiliary Hot Cell Facility.
CAMU = Corrective Action Management Unit.
CWL = Chemical Waste Landfill.
HWMF = Hazardous Waste Management Facility.
LLW = Low-Level Waste.
MLLW = Mixed LLW.
MSB = Manzano Storage Bunker (Manzano Storage Area).
MTRU = Mixed TRU.
NA = Not applicable.
RMWMF = Radioactive and Mixed Waste Management Facility.
SNL/NM = Sandia National Laboratories, New Mexico.
SWTF = Solid Waste Transfer Facility.
TTF = Thermal Treatment Facility.
TRU = Transuranic.

Limited treatment (e.g., elemental neutralization) can be performed at the point of waste generation or in a RCRA less-than-90-day accumulation area, with required documentation. The implementation of these special treatment provisions does not designate these areas as treatment facilities. There are several such units at SNL/NM, primarily consisting of units that neutralize wastewater before it is discharged to the sewer system; these units are not discussed individually in this source document.

4.2 Waste Management Facilities

The SNL/NM waste management facilities are presented and discussed in this section. Figure 4-1 shows the locations of specific operations for the waste management facilities.

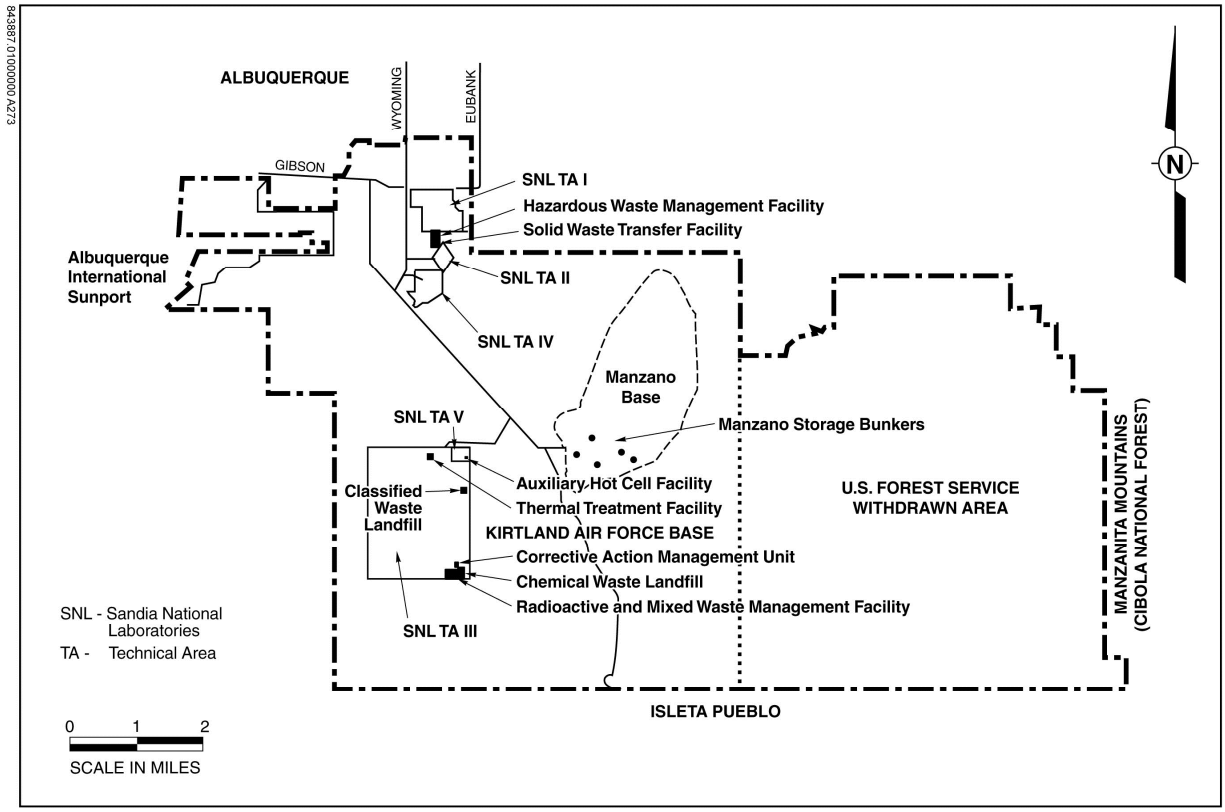

Figure 4-1. SNL/NM Waste Management Facilities Specific Operation Locations

4.2.1 Hazardous Waste Management Facility

Location:	DOE property between Technical Area (TA)-I and TA-II.
Operations:	Storage, repackaging
Wastes:	Hazardous, nonhazardous, special
Other Operations and Materials:	Storing and repackaging of recyclable materials
Permits:	RCRA Permit issued August 1992, expired August 2002; remains in force until new permit is issued (NMED 2009a)

RCRA hazardous waste and nonhazardous waste, excluding explosive waste, that is generated at SNL/NM and its associated satellite facilities (e.g., the Advanced Materials Laboratory located at University of New Mexico, Albuquerque) are collected and transported to the HWMF for storage and repackaging prior to transportation to off-site facilities for recycling, treatment, or disposal. (NMED 2009a, SNL/NM 2009a)

The HWMF consists of several buildings in a fenced compound on 1.35 acres. There are two permanent buildings, the Waste Packaging Building (Building 959) and the Waste Storage Building (Building 958). The HWMF also includes the following ancillary facilities within the fenced area:

- Several supply sheds
- A covered waste oil storage area
- A catchment pond
- Three office trailers
- Two self-contained, prefabricated storage structures

The area within the fence is paved with asphalt. A lined catchment pond within the HWMF perimeter is used to contain all storm water runoff. The pond also collects water from fire control activities.

There are separate facilities for RCRA- and TSCA-regulated waste.

Individual containers of wastes are stored in Building 959 and segregated into separate bays based on hazards and compatibility, so that incompatible wastes are separated. The following inspections are routinely conducted by personnel at the HWMF:

- Daily operational readiness rounds
- Scheduled preventive maintenance inspections
- Weekly RCRA inspections
- Inspections of the retention pond

Environmental sampling of the retention pond water may also be conducted (NMED 2009a, SNL/NM 2009a)

Each waste item received at the HWMF is labeled for tracking purposes. After sufficient quantities of specific waste items and containers have accumulated in the bays, the items are

packed (individually or by bulk) in Building 959 into larger containers suitable for shipment. These packages are moved to Building 958 to await shipment to a permitted TSDF or recycling center. Wastes within Building 958 are segregated into different bays based on hazards and compatibility. Hazardous waste is processed and shipped off site within one year of receipt (SNL/NM 2009a). Nonhazardous waste may be stored longer than one year if necessary (e.g., to accumulate sufficient quantities for shipment.)

The HWMF includes a covered and curbed storage area for containers of waste oil, other nonhazardous wastes and recyclable materials, and supplies. Table 4-2 presents the capacities for the HWMF.

Table 4-2. SNL/NM HWMF Capacities

Building or Area	Name or Other Number	Storage Capacity (gal.)	Notes
958	Waste Storage Building	59,950	Calculated using RCRA secondary containment requirements
959	Waste Packaging Building	7,590	Calculated using RCRA secondary containment requirements
958B	NA	5,000	Calculated using RCRA secondary containment requirements
958C	NA	5,000	Calculated using RCRA secondary containment requirements

gal. = *Gallon(s)*
HWMF = *Hazardous Waste Management Facility.*
NA = *Not applicable.*
RCRA = *Resource Conservation and Recovery Act.*
SNL/NM = *Sandia National Laboratories, New Mexico.*

4.2.2 Thermal Treatment Facility (TTF)

Location: North-central portion of TA-III (south of Building 6715)
Operations: Treatment
Wastes: Explosive hazardous waste generated in Building 6715
Other Operations and Materials: None
Permits: RCRA Permit issued November 1994, expired November 2004, remains in force until new permit is issued (NMED 2009b)

The TTF was originally built in 1969 and reconstructed in 1986 to support the Light-Initiated High Explosive (LIHE) Facility by providing on-site treatment for explosive-contaminated waste for which transportation is forbidden according to the DOT requirements.

Although the LIHE Facility was decommissioned in 1992, Sandia obtained a RCRA permit to treat small quantities of explosive waste from other SNL/NM operations at the TTF and maintain the capability of resuming LIHE operations. Wastes were periodically treated from 1995 through 1998. In 2002 and 2003, the DOE and Sandia refurbished the LIHE Facility and received a modification to the TTF operating permit to allow treatment of the explosive wastes from the LIHE operations. TTF operations resumed in 2004.

The TTF consists of an open-burn treatment area surrounded on the west, south, and east sides by an 8-foot-tall earthen berm. An 8-foot-high chain link security fence surrounds the entire TTF.

The treatment area consists of a 20.8-gallon (gal.) square burn pan constructed of 0.375-inch (in.) steel. A remotely operated metal lid can be raised to open, or lowered to cover, the burn pan. The burn pan is located near the center of a square curbed slab of concrete 14 feet on a side that is lined with 0.5-in. steel. The burn pan is enclosed within a square cage approximately 4 feet on a side, consisting of an expanded metal screen approximately 8 feet high. An expanded metal screen door, remotely activated from inside Building 6715, provides access to the burn pan. Moveable steel panels are attached to the lower part of two sides of the cage to control airflow as needed.

An enclosure on the east side of the cage houses three propane burners, which can be remotely activated from inside Building 6715. Liquid wastes to be treated are transferred from Building 6715 to the TTF through hoses and metal tubing utilizing a remotely operated pump. Solid items to be treated in the TTF are first wet down with water to temporarily reduce the explosive sensitivity and then hand-carried in appropriate containers and manually placed or poured into the burn pan. The burn pad lid remains closed as much as possible except during loading and combustion to minimize evaporation of volatile waste.

During treatment, the burners are ignited and operate until combustion is complete. To provide additional assurance of complete treatment, personnel typically operate the burners for a period of time from 30 to 60 minutes. After the treatment and/or post-treatment burning operations are complete, personnel turn off the propane burners and lower the lid. (NMED 2009b, SNL/NM 2009a)

During the normal conduct of operations, personnel formulate a silver acetylide silver nitrate (SASN) explosive slurry compound in Building 6715 and perform tests using the SASN. The wastes that are treated in the TTF are generated during SASN formulation and cleanup of the formulation and spray area. The wastes are generated and treated intermittently during testing activities that generally last for one to three days. Personnel strictly adhere to waste handling procedures that are revised as needed.

Explosive waste is not stored at the TTF and is only present during treatment. If for some reason a treatment is aborted and removal of the waste is deemed unsafe, personnel will lower the lid remotely to cover the burn pan, and the waste will remain there until personnel can treat the waste or safely remove it. In this case, all Sandia and RCRA requirements for storage of explosive and hazardous wastes are met.

Precipitation that falls on the steel-lined concrete pad drains through a filter into a 157-gal. catch tank. Soil and other particulates are contained in the filter, which is managed as hazardous waste due to the potential presence of silver. The water in the holding tank is sampled as needed to verify that it meets discharge parameters before it is discharged to the City of Albuquerque sewer system.

The ash in the burn pan contains silver. It is removed from the pan as soon as possible after treatment and is managed as a hazardous waste (SNL/NM 2009a). Table 4-3 presents the capacities (limits) for the TTF.

Table 4-3. SNL/NM TTF Capacities

Building or Area	Name or Other Number	Capacity or Limit	Notes
TTF	Burn Pan	20.8 gal.	Maximum volume allowed in burn pan at one time
TTF	Burn Pan	190 lbs	Maximum mass of combined solid and liquid allowed in burn pan at one time
TTF	Burn Pan	2.4 lbs	Maximum NEW of explosives treated during any treatment operation
TTF	Burn Pan	7,300 lbs	Maximum NEW treated during a year

gal. = *Gallon(s).*
lbs = *Pounds.*
NEW = *Net Explosive Weight.*
SNL/NM = *Sandia National Laboratories, New Mexico.*
TTF = *Thermal Treatment Facility.*

4.2.3 Radioactive and Mixed Waste Management Facility

Location: Southeast corner of TA-III
Operations: Sorting, repackaging, storage, treatment
Wastes: LLW, MLLW, TRU, MTRU
Other Operations and Materials: Sorting, repackaging, storage, treatment of radiological and nuclear materials
Permits: RCRA interim status until permit is issued

The Radioactive and Mixed Waste Management Facility (RMWMF) serves as a centralized facility for characterization, treatment, repackaging, and storage of low-level waste, TRU waste, and mixed waste. Radioactive wastes may occasionally be received that are generated by operations at remote test facilities. Wastes may be stored until off-site TSDFs are identified that can accept the waste. The volume of waste varies depending on the storage time before the waste is shipped for disposal. This facility enables Sandia to handle and store the waste in compliance with applicable requirements of federal, state, and local environmental regulations, DOE directives, and off-site waste acceptance criteria. In addition, the facility allows Sandia to prepare the waste for shipment for treatment and disposal in accordance with specific requirements regarding waste certification, packaging, and transport (SNL/NM 2005).

The RMWMF consists of several buildings in and areas around a 3.11-acre fenced compound in the southeastern corner of TA-III. Four permanent buildings are part of the complex consisting of the Mixed Waste Facility (Building 6920), Waste Assay Facility (Building 6921), and waste storage buildings (6925 and 6926) and are located inside the fenced area. The RMWMF also includes the following ancillary facilities within the fenced area:

- Several transportainers (TP) used for storage of supplies
- An outdoor waste storage area with TPs
- A retention pond
- An office trailer
- Two self-contained, prefabricated storage structures

The following facilities are located outside the fenced area of the RMWMF:

- An outdoor gravel-covered storage area with TPs (south)
- Three office trailers (south and northeast)
- Three Sprung™ structures on asphalt pads surrounded by a fence (north)

Within the fenced compound, the area east, north, and west of Building 6920 is paved with asphalt. The area south of Building 6920 is not used for waste management activities. It was previously used for storage of containers of legacy radioactive materials and LLW inside TPs. A propane-fired liquid evaporator is also located on a concrete pad in this area. A synthetic-lined water retention pond is located at the west end of the RMWMF compound. The pond collects storm water runoff and water from fire control activities.

The gravel-covered area south of the RMWMF has been used for storage of equipment and supplies, and for storage of legacy radioactive materials and LLW inside TPs. The Sprung™ structures are used for storage of equipment, supplies, and radioactive wastes and materials.

Building 6920 is used for sorting, repackaging, storage, and treatment of waste, including low-level and TRU mixed and radioactive wastes and materials. Wastes and materials are stored and treated in Buildings 6921 and 6925,and are stored in Building 6926. The two skid-mounted storage structures with built-in secondary containment (TP150 and TP153), located to the west of Building 6920, are used for storage of reactive wastes and materials and ignitable or flammable wastes and materials. The paved area within the fence is used for outdoor storage of containerized or large self-contained (e.g., large pieces of equipment) mixed and radioactive wastes and materials (SNL/NM 2009a).

The specific storage location for waste and materials is based on compatibility, waste form, regulatory requirements, and special features that are built into the storage areas. All containers of liquid waste are stored on secondary spill containment facilities.

The following inspections are routinely conducted by personnel at the RWMWF:

- Daily operational readiness rounds
- Scheduled preventive maintenance inspections

- Weekly RCRA inspections
- Routine radiation and contamination surveys.

Environmental sampling of the retention pond water and building exhaust stack emissions may also be conducted (SNL/NM 2008).

The north bay of Building 6920 contains a glove box used for opening and sorting containers of waste, particularly wastes that present a contamination hazard. The North Bay also contains additional rooms and work areas. Wastes can be and are stored in most areas of the North and South bays. The South Bay includes four small rooms and a large area that are used for treatment and storage.

Building 6921 houses radio assay equipment and includes storage and treatment areas. Buildings 6925 and 6926 are used primarily for storage, although some treatment occurs in Building 6925. Wastes are usually loaded onto vehicles by way of the loading dock and ramp on the west end of Building 6926.

Treatment operations are performed as needed and are tailored to specific wastes. The following treatment activities take place at the RMWMF:

- Solidification and stabilization of liquids in batches in appropriate containers (up to 55 gal.) (Buildings 6920 and 6921)
- Chemical deactivation and neutralization of reactive and corrosive liquids, solids, and gases in batches in appropriate containers (Buildings 6920 and 6921)
- Macroencapsulation of solid items in inert material (e.g., polymers, resins, or concrete) in appropriate molds or containers (up to 840 gal.) (Buildings 6920, 6921, and 6925)
- Thermal deactivation of reactive items by heating (up to 10 lbs per hour) (Buildings 6920 and 6921)
- Amalgamation of small quantities of elemental mercury in batches (up to 2 lbs per hour) (Buildings 6920 and 6921)
- Physical treatment (volume reduction, separation, cutting, crushing, puncturing and depressurizing, dissolution) (up to 20 lbs per hour) with hand tools or bench-scale apparati (Buildings 6920 and 6921)
- Dewatering radioactively contaminated water through passive solar evaporation or through active evaporation (propane-fired evaporator in the southwest corner of the RMWMF fenced area)

Treatment capacities and quantities vary according to the operation. Treatment rates and capacities for mixed wastes are specified in the Permit Application (SNL/NM 2009a). Treatment process, rates, and capacities are similar for LLW and TRU wastes and materials. Evaporation is not used for mixed waste treatment (SNL/NM 2009a).

Table 4-4 presents the storage capacities of the RMWMF, and Table 4-5 presents the treatment capacities for the RMWMF.

Table 4-4. SNL/NM RMWMF Storage Capacities

Building or Area	Name or Other Number	Storage Capacity (gal.)	Notes
6920	Mixed Waste Facility	13,420	Limits apply to mixed wastes only and do not include radioactive wastes or materials
6921	Waste Assay Facility	7,810	Limits apply to mixed wastes only and do not include radioactive wastes or materials
6925	Radioactive / Mixed Waste Storage Building	83,160	Limits apply to mixed wastes only and do not include radioactive wastes or materials
6926	Radioactive / Mixed Waste Staging / Shipping Facility	83,160	Limits apply to mixed wastes only and do not include radioactive wastes or materials
TP150		1,100	Limits apply to mixed wastes only and do not include radioactive wastes or materials
TP153		1,100	Limits apply to mixed wastes only and do not include radioactive wastes or materials
Outdoor Area		19,800	Limits apply to mixed wastes only and do not include radioactive wastes or materials
South part of compound and area outside compound		No limit	
Sprung™ 1			Nominally 100 by 50 feet, 24 feet high
Sprung™ 2			Nominally 100 by 50 feet, 24 feet high
Sprung™ 3			Nominally 100 by 50 feet, 24 feet high

gal. = *Gallon(s).*

RMWMF = *Radioactive and Mixed Waste Management Facility.*

SNL/NM = *Sandia National Laboratories, New Mexico.*

TP = *transportainer.*

Table 4-5. SNL/NM RMWMF Treatment Capacities

Treatment	Building or Area	Capacity	Annual Limit	Notes
Chemical Deactivation	6920, 6921	65 gal./day	3, 000 gal./yr	Limits apply to mixed wastes only and do not include radioactive wastes or materials
Macroencapsulation	6920, 6921, 6925	840 gal./day	6,000 gal./yr	Limits apply to mixed wastes only and do not include radioactive wastes or materials
Stabilization	6920, 6921	550 gal./day	6,000 gal./yr	Limits apply to mixed wastes only and do not include radioactive wastes or materials
Thermal Deactivation	6920, 6921	10 lbs/hr	150 lbs/yr	Limits apply to mixed wastes only and do not include radioactive wastes or materials
Amalgamation	6920, 6921	2 lbs/hr	100 lbs/yr	Limits apply to mixed wastes only and do not include radioactive wastes or materials
Physical Treatment	6920, 6921	20 lbs/hr	4,000 lbs/yr	Limits apply to mixed wastes only and do not include radioactive wastes or materials
Evaporation, Active	South of 6920	50 gal./hr		500-gal. tank
Evaporation, Passive	Outside areas around 6920			Evaporation of liquids

gal. = *Gallon(s).*
hr = *Hour.*
lbs = *Pounds.*
RMWMF = *Radioactive and Mixed Waste Management Facility.*
SNL/NM = *Sandia National Laboratories, New Mexico.*
yr = *Year.*

4.2.4 Auxiliary Hot Cell Facility

Location: Building 6597 in TA-V
Operations: Sorting, repackaging, storage, treatment
Wastes: LLW, MLLW, TRU, MTRU
Other Operations and Materials: Sorting, repackaging, storage, treatment of nuclear materials
Permits: RCRA interim status until permit is issued

The Auxiliary Hot Cell Facility (AHCF) will be used for characterization, treatment (if necessary), repackaging, and storage of LLW, TRU waste, mixed waste, and radioactive materials that cannot be managed at the RMWMF. Wastes may be stored until off-site TSDFs are identified that can accept the waste. The AHCF is not yet operational but this facility will enable Sandia to handle and store the waste in compliance with applicable requirements of

federal, state, and local environmental regulations, DOE directives, and off-site waste acceptance criteria. In addition, the facility operations will facilitate preparation of waste for shipment for treatment and disposal in accordance with specific requirements regarding waste certification, packaging, and transport.

The AHCF consists of the high-bay, mid-bay, and low-bay sections of Building 6597. The RCRA-regulated items and waste management operations are limited to the high-bay. The AHCF includes the following within the high bay:

- Stainless steel-lined, concrete hot cell with an opening in the roof for introducing and removing items.
- Work area north and east of the hot cell that includes a fume hood with a local ventilation system.
- Eight steel-lined, concrete, storage silos in the floor. Two silos are in the floor of the hot cell and the others are in the floor of the work area.
- A permanent shield wall with manipulator arms.
- A storage area south of the hot cell.

The mid bay will be used for general staging of materials and the low bay is not planned to be used. The high bay is equipped with a series of floor trenches that will serve to collect water from fire-fighting activities. Liquids will be stored within portable secondary containment; the floor trenches will not be used to provide containment during normal operations (SNL/NM 2009a).

Operations will be conducted on a "campaign" basis. Table 4-6 presents the storage capacities of the AHCF, and Table 4-7 presents the treatment capacities for the AHCF.

Table 4-6. SNL/NM AHCF Storage Capacities

Area	Storage Capacity (gal.)	Notes
Container Storage Area	3,520	Limits apply to mixed wastes only and do not include radioactive wastes or materials
Storage Silos	1,456	Limits apply to mixed wastes only and do not include radioactive wastes or materials
Hot Cell	900	Limits apply to mixed wastes only and do not include radioactive wastes or materials
Work Area (including fume hood)	2,200	Limits apply to mixed wastes only and do not include radioactive wastes or materials

AHCF = Auxiliary Hot Cell Facility.

gal. = Gallon(s).

SNL/NM = Sandia National Laboratories, New Mexico.

Table 4-7. SNL/NM AHCF Treatment Capacities

Treatment	Capacity	Annual Limit	Notes
Chemical Deactivation	55 gal./day	2,000 gal./yr	Limits apply to mixed wastes only and do not include radioactive wastes or materials
Macroencapsulation	55 gal./day	6,000 gal./yr	Limits apply to mixed wastes only and do not include radioactive wastes or materials
Stabilization	55 gal./day	6,000 gal./yr	Limits apply to mixed wastes only and do not include radioactive wastes or materials
Physical Treatment	20 lbs/hr	4,000 lbs/yr	Limits apply to mixed wastes only and do not include radioactive wastes or materials

AHCF = Auxiliary Hot Cell Facility.
gal. = Gallon(s).
hr = hour(s).
lbs = Pounds.
SNL/NM = Sandia National Laboratories, New Mexico.
yr = Year.

4.2.5 Manzano Storage Bunkers

Location: Seven bunkers in Manzano Area of KAFB
Operations: Storage
Wastes: LLW, MLLW, TRU, MTRU
Other Operations and Materials: Storage of radiological and nuclear materials
Permits: RCRA interim status until permit is issued

The Manzano Storage Bunkers (MSB) are used for storage of wastes and materials. Five of the seven bunkers are RCRA interim-status units.Table 4-8 provides MSB information.

Table 4-8. SNL/NM MSB Information

Bunker	RCRA	
37034	X	
37045	X	
37055	X	
37057	X	
37063		
37078		
37118	X	

MSB = Manzano Storage Bunker.
RCRA = Resource Conservation and Recovery Act.
SNL/NM = Sandia National Laboratories, New Mexico.

Each bunker is constructed of concrete (walls, roof, and floor) and each is covered by earthen materials. Of the three types of bunkers, two have concrete entrance tunnels and inner doors between the main chamber and the entrance door. The third type has no entrance tunnel or inner doors.

The specific storage location for waste and material is based on compatibility, waste form, and regulatory requirements.

Personnel are not present except during operations. The following inspections are routinely conducted by personnel at the MSBs:

- Scheduled preventive maintenance inspections
- Weekly RCRA inspections
- Routine radiation and contamination surveys.

Table 4-9 presents the capacities of the MSBs.

Table 4-9. SNL/NM MSB Capacities

Bunker	Storage Capacity (gal.)	Notes
37034	25,080	Limits apply to mixed wastes only and do not include radioactive wastes
37045	55,440	Limits apply to mixed wastes only and do not include radioactive wastes
37055	55,440	Limits apply to mixed wastes only and do not include radioactive wastes
37057	55,440	Limits apply to mixed wastes only and do not include radioactive wastes
37063	N/A	N/A
37078	N/A	N/A
37118	35,200	Limits apply to mixed wastes only and do not include radioactive wastes

gal. = *Gallon(s).*
MSB = *Manzano Storage Bunker.*
SNL/NM = *Sandia National Laboratories, New Mexico.*
N/A = *Not Applicable*

4.2.6 Corrective Action Management Unit

Location:	Southeast corner of TA-III, northwest of RMWMF
Operations:	Long-term containment
Wastes:	Hazardous and nonhazardous remediation wastes
Other Operations and Materials:	None
Permits:	RCRA Permit issued September 1997, expired in September 2002, remains in force until new permit is issued (NMED 2009c)

The Corrective Action Management Unit (CAMU) was a 19-acre site used between 1999 and 2003 for management of remediation wastes generated as part of the voluntary corrective action activities undertaken during closure of the nearby Chemical Waste Landfill (CWL). Prior to closure, the CAMU consisted of the following areas:

- Four staging areas for untreated and treated waste
- A treatment pad with two mobile treatment systems
- A containment cell
- Support areas

When operations were completed in 2003, the waste staging, treatment pad, and support areas at the CAMU were closed, and all hazardous wastes and hazardous waste residues were removed. The CAMU containment cell was closed with waste in place and provides long-term containment of the wastes during post-closure care.

The containment cell consists of an engineered liner system and final cover system designed to prevent the migration of hazardous constituents to the environment from leachate and hazardous waste decomposition products generated during the post-closure care period. The bottom and sidewall liner system includes a high-density polyethylene geo-membrane underlain by a geo-synthetic clay liner. The cover system includes a polyethylene liner covered with a sand and gravel layer, topped with soil and vegetation. The cover is mounded and contoured to direct storm water away from the cell.

In addition to the cell liner and final cover system, the containment cell incorporates a liquid management system. Leachate is generated during the first several years after closure as the water used during treatment and compaction of the soil migrates to the bottom of the cell. The leachate is collected in a collection pipe in a sump at the bottom of the cell and pumped out periodically. The leachate collection and removal system is inspected and maintained to provide good performance. The amount of leachate will decrease over time as the cover and liner system prevents additional water from entering the cell.

A vadose zone monitoring system under the bottom liner of the cell and around the perimeter of the cell provides monitoring and leak detection to verify the integrity and performance of the cell. The monitoring data are evaluated to determine whether there has been leakage from the containment cell. Monitoring is expected to continue for 30 years and will be evaluated periodically under the terms of the post-closure care permit to be issued by the NMED.

It is estimated that on-site treatment and containment at the CAMU saved more than $200 million compared to conventional off-site disposal of the contaminated CWL soil (Irwin, et al. 2003). On-site treatment and containment also precluded extensive transportation that would have been required for off-site disposal. Table 4-10 presents the capacity of the CAMU Containment Cell.

Table 4-10. SNL/NM CAMU Capacity

Area	Storage Capacity (cubic yards)	Notes
Containment Cell	31,800	Quantity of soil in the closed cell

CAMU = Corrective Action Management Unit.
SNL/NM = Sandia National Laboratories, New Mexico.

4.2.7 Chemical Waste Landfill

Location: Southeast corner of TA-III, east of RMWMF
Operations: Post-closure care of remediated hazardous waste landfill
Wastes: Some residual hazardous and nonhazardous waste constituents
Other Operations and Materials: None
Permits: Operated and closed under interim status, RCRA Post-Closure Care Permit issued October 2009, will take effect after closure is completed. (NMED 2009d)

The CWL is a 1.9-acre disposal site used from 1962 until 1985 for disposal of hazardous, radioactive, and solid waste generated by research activities at SNL/NM. Disposal activities at the site ended in 1985. The CWL area was also used as a hazardous waste drum storage facility from 1981 to 1989.

In 1985, groundwater monitoring began at the CWL in accordance with RCRA requirements. In 1990, trichloroethene was identified in the groundwater at a concentration exceeding the regulatory limit. The DOE and Sandia developed a corrective action program that was incorporated into the closure plan.

The DOE and Sandia conducted two Voluntary Corrective Measures (VCM) as part of the closure activities consisting of soil vapor extraction (VE) and landfill excavation (LE). The active phase of the VE VCM was completed in July 1998; the passive VE phase is ongoing. During the LE VCM, the landfill contents were excavated between 1998 and 2002. Most of the excavated soil was suitable for treatment at the CAMU and was managed there. Other soil and excavated wastes were sent to permitted, off-site, disposal facilities.

During 2002 and 2003, the excavated area was backfilled with soil to an elevation that was 4 feet below the surrounding ground surface. The soil was tested and evaluated prior to being used as backfill. The soil used as backfill met the risk-based criteria that were developed for the landfill

and approved by the NMED. The soil comprising the uppermost 5 feet of backfill consisted of clean soil obtained from a nearby borrow pit area.

The DOE and Sandia installed an at-grade, evapotranspirative soil cover on the landfill during 2005. The cover surface is not significantly mounded relative to the surrounding area. The cover includes a lower native soil layer covered by an 18-in.-thick layer of topsoil and native vegetation. Percolation and infiltration of surface moisture through the cover and backfilled landfill is minimized through a combination of evaporation and transpiration to the atmosphere, coupled with perimeter surface contours to direct storm water away from the landfill. Table 4-11 presents the capacity for the CWL.

Table 4-11. SNL/NM CWL Capacity

Area	Quantity (cubic yards)	Notes
Landfill	Approximately 52,000	Quantity of soil and waste excavated from the CWL during the LE VCM

CWL = Chemical Waste Landfill.
LE = Landfill Excavation.
SNL/NM = Sandia National Laboratories, New Mexico.
VCM = Voluntary Corrective Measure.

4.2.8 Classified Waste Landfill

Location: East part of TA-III
Operations: Closure of solid waste landfill
Wastes: Solid waste
Other Operations and Materials: None
Permits: None

The TA-III Classified Waste Landfill is a 5-acre disposal site used from 1989 until 1993 for disposal of classified solid waste generated by research activities at SNL/NM. The site is still operational, although it has received no additional waste since November 1993.

The DOE and Sandia determined that the site was to undergo closure and submitted an Excavation Plan to NMED for approval in 2008 (SNL/NM 2009c). The DOE initiated an Environmental Assessment (EA) in 2009.

As described in the Excavation Plan, items excavated from the site will be initially sorted and segregated based on DOE classification. Classified items may be disassembled to allow complete or partial recycling. The disassembly/sanitization operation is expected to result in recyclable metals and nonhazardous solid waste.

Also described in the plan, the excavated soil will be screened, segregated, stockpiled, sampled, and analyzed for hazardous constituents. Soil that meets the physical and environmental criteria may be used as backfill during restoration of the site. Soil that does not meet the environmental criteria will be managed in accordance with applicable requirements for contaminated soil.

Solid waste and recyclable metals will be stored in bins prior to transportation to the SWTF for processing and shipment off site for further management. Operations at the SWTF are discussed in Section 4.2.9.

Also described in the plan, the excavated soil will be screened, segregated, stockpiled, sampled, and analyzed for hazardous constituents. Soil that meets the physical and environmental criteria will be managed in accordance with applicable requirements for contaminated soil. Table 4-12 presents the capacity for the Classified Waste Landfill.

Table 4-12. SNL/NM Classified Waste Landfill Capacity

Area	Quantity (lbs)	Notes
Landfill	482,468	Quantity of waste placed in Classified Waste Landfill according to inventory records

lbs = Pounds.

SNL/NM = Sandia National Laboratories, New Mexico.

4.2.9 Solid Waste Transfer Facility

Location: DOE property between TA-I and TA-II.
Operations: Screening, compaction by baling, accumulation
Wastes: Nonhazardous, commercial solid waste
Other Operations and Materials: Screening, compaction by baling, and accumulating recyclable materials
Permits: None required

The SWTF primarily accepts solid waste. It does not accept hazardous, radioactive, residential, or food service wastes. Processing solid waste at the SWTF consists of screening 100 percent of the waste for prohibited materials, which are removed when identified. The waste is further screened when it is placed on a conveyor that passes under a radiation detection system. If radiation is detected above background levels, the conveyor is automatically shut down and the source is investigated. The conveyor then feeds the waste into a baler where it is compressed into desk-sized bales. The bales are weighed, individually tracked, and loaded into a trailer for transport to a local solid waste landfill. The SWTF also processes and ships (but does not collect) solid waste from KAFB and DOE/NNSA.

In addition to solid waste, operations at the SWTF include management of recyclable items. Sandia collects, processes (screens, bales, and tracks), markets, and ships the following recyclable materials from SNL/NM: cardboard; white paper; mixed paper; aluminum cans; scrap metals; toner cartridges; and plastic. The SWTF also provides some recycling support for KAFB and DOE/NNSA. In support of small C&D projects at SNL/NM, the SWTF C&D Recycle Center accepts small quantities of C&D waste that is managed separately from the solid waste. The C&D Recycle Center provides contractors of small C&D projects with a location to recycle cardboard, wood, and scrap metal.

Baled solid waste and recyclable materials are stored for short time periods until full truckloads accumulate at the loading dock of the SWTF. The SWTF is used as temporary storage for baled trash and baled recyclable material until individual shipments can be filled, scheduled, and shipped (SNL/NM 2009d).

5. POLLUTION PREVENTION PROGRAM

5.1 Program Scope

The P2 Program provides guidance and technical support to reduce waste generation and resource consumption and to help improve the overall efficiency of processes and organizations within SNL/NM. To achieve continuous improvement, the program annually sets targets and activities for recycling, waste reduction, environmentally preferable purchasing (EPP), and electronics stewardship. The P2 Program adheres to all applicable requirements and this compliance includes DOE contractual requirements for addressing applicable Executive Orders, such as 13423, *Strengthening Federal Environmental, Energy, and Transportation Management.* Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance,* signed on October 5, 2009, by the President of the United States, is not presently incorporated into contractual requirements.

DOE Order 450.1A (DOE 2008) requires the site Environmental Management System (EMS) to include objectives and measurable targets, reviewed and updated annually as appropriate, that contribute to achieving the Sustainable Environmental Stewardship (SES) goals in Attachment 2 of the Order. The SES goals within the purview of the P2 Program include the following:

- Waste Prevention
- Reduction of Toxic and Hazardous Chemicals and Materials, including Ozone-Depleting Substances
- EPP
- Electronics Stewardship
- Post-Consumer Material Recycling

The P2 Program partners with numerous organizations at SNL/NM, including Facilities Engineering, Procurement, and other programs within ES&H. P2 Program staff research waste reduction technologies and strategies applicable to work processes, research avenues to reuse and recycle waste streams currently deposited in landfills or incinerated, and assists with cost-effective implementation for new waste reduction or recycling initiatives.

5.2 Waste Reduction

Sandia continues to work on reducing the quantities of waste generated. Data are gathered both quarterly and annually from which trends are determined. With the expiration in 2005 of the goals set by the DOE in 1993 in DOE Order 5400.5, Change 2, *Radiation Protection of the Public and the Environment* (DOE 1993), Sandia now sets waste reduction goals annually to pursue continuous improvement.

Through a structured analysis known as Pollution Prevention Opportunity Assessment (PPOA), processes generating wastes are assessed and waste reduction measures and strategies are investigated and recommended. The P2 Program conducts PPOAs periodically and provides less structured technical assistance on an ongoing basis. Five PPOAs have been completed in the last

five years, with two others in draft final form. Implementation of PPOA recommendations is tracked on an ongoing basis.

Additionally, Sandia mission programs personnel accomplish waste minimization on their own initiative through implementation of their division's EMS. The following describes several examples of P2 Program successes:

- One division reduced chemical inventories by 10 percent and projected a hazardous waste reduction of 10 percent in its 2006 EMS Action Plan.
- In 2007, a team tasked with scaling up a bench-top process revised the process to reduce generation ofhazardous waste.
- The following highlights the results achieved in 2008 by implementing recommendations presented in the PPOA completed the previous year :
  - A team formed to promote implementation of the recommendations reduced deionized (DI) water use, prolonging the life of ion exchange resin beds, and reducing of DI water production costs.
  - One process improvement reduced solvent use.
- During the course of 2009, P2 streamlined the solid waste dumpster infrastructure on site, resulting in the following achievements:
  - Unneeded waste dumpsters were removed, repainted, and put in service to collect recyclable materials (e.g., cardboard and mixed paper)
  - Undersized recycle dumpsters were upgraded

  Dumpsters were logically grouped into sets of solid waste, cardboard, and mixed paper as appropriate.
- Since 2005, Sandia has reduced the amount of solid waste sent to offsite TSDFs for disposal.

5.3 EPP Program

Sandia seeks to integrate EPP with procurement contracts and construction specifications and develops partnerships with suppliers who share a similar vision of environmental stewardship. The P2 Program works with procurement, suppliers, and purchasers to make green products preferred at the laboratories. The purchase of recycled-content products is one way Sandia supports the recycling industry and limits its contribution to the demand for virgin materials and the energy-intensive processing required to turn them into saleable goods.

One particularly successful purchase of recycled-content products has been the Sandia toner supply arrangement. The contract indicates that a remanufactured cartridge is to be offered first for any model available. Remanufactured cartridges save money and also keep plastics from ending up in the landfill. Other examples of purchasing recycled-content items included the following:

- The janitorial supply contract provides recycled-content items for all paper products and plastic bags used on site.

- The office products supplier's "green catalog" is offered to all administrative assistants and purchasers by P2 as the first source for ordering office supplies. The entire catalog is comprised of recycled-content items and other environmentally preferable products.

5.4 Electronics Stewardship

Electronics Stewardship covers the life-cycle impacts of electronic office equipment assets and is an area of expanding interest in the DOE and federal government as a whole. Electronics life-cycle management is divided into three stages including purchase, operations, and end-of-life management. The purpose of Sandia's electronics stewardship program is to address each of these stages. The P2 group is tasked with initiating, facilitating, and monitoring improvements to performance at all three stages.

To give structure to its electronics stewardship program, Sandia joined the Federal Electronics Challenge (FEC) program in February 2006 and has continued to be a partner. The FEC promotes a comprehensive approach to reducing the environmental impacts of electronics assets ownership. One part of that approach is use of the Electronic Product Environmental Assessment Tool (EPEAT[1]) in the purchase of electronic equipment. In 2008, 99 percent of Sandia's applicable purchases (desktop and laptop computers and liquid crystal display monitors) were EPEAT Silver or higher. Of that total, about two-thirds of the computer purchases were EPEAT Gold. This higher rating means, for example, that the product intentionally is manufactured without cadmium or hexavalent chromium; the plastic housing is free of polyvinyl chloride; the batteries are free of lead, mercury, and cadmium; and the product itself is more than 90 percent reusable or recyclable. During Fiscal Year 2009, more than 80 percent of total applicable purchases were EPEAT Gold-certified.

Sandia's Property Reapplication Services receive and reapply equipment and material that still has value. One continuing stream of equipment received that usually cannot be reapplied after a certain technology threshold is reached are computers, monitors, and other office electronics equipment. If a unit is not immediately reapplied to another individual, it enters the Property Reapplication system. Since 2007, Property Reapplication has separated e-scrap for shipment to an approved electronics recycler that dismantles and segregates the material for reuse or recycling of individual components. Sandia's e-scrap-recyclers are visited and reviewed to ensure their compliance with all applicable requirements. The recycling rate for SNL/NM IT equipment continues to stand at 100 percent and reduces environmental impacts by keeping used material out of the landfill and providing valuable raw materials to the next generation of computing machines. Considering the nature of work and the associated number of computing systems purchased annually, this practice represents a dramatic reduction of what would otherwise be solid and potentially hazardous waste.

[1] EPEAT = A set of criteria in eight different electronic categories to determine the environmental attributes of a particular electronic office product (www.epeat.net). At this point, EPEAT targets only computer desktops/towers, notebook computers (laptops), and monitors.

5.5 Post-Consumer Reuse and Recycling

The generation of solid waste at SNL/NM is categorized as either routine or non-routine, based on the nature of the generating operation, process, or activity. Routine waste generation results from production, analytical, research and development, treatment, storage, and disposal operations, and other, ongoing periodic and recurring work. Non-routine waste generation results from one-time activities associated with new construction, D&D, LTES, and spill cleanup projects. The most recent trends in the generation of routine solid waste at SNL/NM have been generally downward. Trends in non-routine solid waste generation are not predictable due to the intermittent nature of generation activities.

The P2 Program performs numerous functions and activities to support recycling of both routine and non-routine solid waste by diverting materials suitable for reuse and recycling from disposal into landfills, minimizing the economic and environmental impacts of waste disposal, and providing long-term monitoring and surveillance. The P2 Program staff assists waste management, line, and support organizations in implementing, maintaining, and improving comprehensive and effective programs for reuse and recycling of routine solid wastes.

In 2009, 57 percent of Sandia's routine waste and 89 percent of non-routine waste was recycled. This diverted 21,889 tons of waste from landfills. In 2009, the major recycling initiatives included continuing to promote mixed paper (improved infrastructure and communication to recycling "champions"), launching a pilot of alkaline and carbon-zinc battery recycling, ramping up of plastic and Styrofoam recycling, and reusing concrete and asphalt in the form of what is referred to as "conphalt," a 50/50 mixture of crushed concrete and asphalt debris from the Concrete and Asphalt Recycling Area (CARA).

Mixed paper recycling increased by 15,000 lbs during 2008 to more than 100,000 lbs in 2009. Volunteers continue to move all of the material out of buildings to distributed yellow dumpsters designated for mixed paper. Nine new mixed paper dumpsters were deployed in 2009 bringing the total to 30 locations. These dumpsters also became the new distributed drop-off locations for the collection of Styrofoam.

In 2009, Sandia purchased a new piece of equipment that grinds and compacts several types of packing foam into easily transported logs that are of value to plastics recyclers. This is similar to making bales of paper or cardboard for efficient transport to recyclers. Other plastics being collected for recycle starting in 2009 include shrink wrap and rigid polypropylene (#5) plastic. The first test bale of shrink wrap weighed 634 lbs.

Approximately 320 lbs of alkaline and carbon zinc batteries were recycled in Fiscal Year 2009.

C&D Recycling (Non-Routine)

C&D waste is the largest component of non-routine waste generated at SNL/NM. Over the years, the P2 Program has initiated and now maintains support to numerous activities associated with the recycling of C&D waste. One of the main areas is the construction waste management program, which includes working directly with Facilities project and construction managers, infrastructure engineers, and construction contractors to promote recycling. Additionally, the P2

Program promotes the use of the C&D Recycle Center, provides assistance to its operations, and coordinates operations at the CARA.

A marketing program is used to raise recycling awareness with small construction project contractors. The SWTF has listed the C&D Recycling Center for collecting construction and remodeling project waste materials such as scrap metal, wood, cardboard, and wire. The marketing program informs construction contractors about the facility location, layout, and materials that are accepted and encourages them to use the facility rather than sending the materials to a landfill. In December 2006, a new specification was issued for Construction Waste Management, Section 01505. This new specification is now a site-wide requirement for recycling C&D waste during all small or large construction projects and renovation work.

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6. PACKAGING AND TRANSPORTATION OF WASTE

Sandia packages and transports on-site waste between generators and on-site waste management facilities and arranges for transportation to off-site facilities for recycling, treatment, storage, and disposal. The requirements differ according to the waste type, the transporters, and the DOT regulations.

6.1 Waste Packaging

The packaging of waste differs according to the waste type and the transportation requirements. Table 6-1 presents an overview of the general activities performed by waste management departments for packaging and the oversight that is applied to the different processing scenarios.

6.2 Waste Transportation

All waste at SNL/NM is transported off site for recycling, treatment, and/or disposal. Table 6-2 summarizes activities and requirements of waste transportation and the oversight that is applied to the different processing scenarios. Table 6-3 shows the amounts of hazardous wastes shipped from 2005 through 2008. Figure 6-1 shows a five-year summary of the total radioactive waste shipped from SNL/NM for the years 2004 through 2008. For both hazardous waste and mixed wastes, the quantities shipped to off-site TSDFs in 2005 included wastes associated with ER Project activities.

Table 6-1. SNL/NM Waste Packaging Overview by Waste Type

Waste Type		Off-Site Shipments[b]
Asbestos	•	• All DOT requirements are met.
Biological or Infectious	•	• Waste from SNL/NM medical facilities is transported directly to off-site TSDF. • All DOT requirements are met.
Explosive, Hazardous, Industrial Solid, or Unbound Engineered Nanoscale Particles	•	• Packaging activities for Sandia operations that are not on SNL/NM premises may include bulking, laboratory packing, and overpacking performed at the generator site; checked by the waste pickup staff; and improved according to the special needs of the wastes. • Packaging activities at SNL/NM waste management facilities may include bulking, laboratory packing, and overpacking. • All DOT requirements are met. • Explosive waste that is not treated on site at the TTF is transferred to the KAFB EOD Facility for destruction.
Solid	•	• Baling and loading the shipment is done at the SWTF. • All DOT requirements are met.
Mixed	•	• Packaging activities at SNL/NM waste management facilities may include screening, sorting, repackaging, and overpacking. • Radiological surveys accompany all shipments. • Waste is certified on site prior to shipment to certain off-site facilities for disposal. • All DOT requirements are met.

Table 6-1. SNL/NM Waste Packaging Overview by Waste Type (Concluded)

Waste Type		Off-Site Shipments[b]
Radioactive	•	• Packaging activities at SNL/NM waste management facilities may include screening, sorting, repackaging, and overpacking. • Radiological surveys accompany all shipments. • Waste is certified on site prior to shipment to certain off-site facilities for disposal. • All DOT requirements are met.
TSCA-regulated	•	• All DOT requirements are met.

[a]*For example, from generators to waste management facilities.*

[b]*For example, to treatment and disposal facilities.*

DOT = *U.S. Department of Transportation.*
EOD = *Explosives Ordnance Disposal.*
HWMF = *Hazardous Waste Management Facility.*
KAFB = *Kirtland Air Force Base.*
Sandia = *Sandia Corporation.*
SNL/NM = *Sandia National Laboratories, New Mexico.*
SWTF = *Solid Waste Transfer Facility.*
TSCA = *Toxic Substances Control Act.*
TSDF = *Treatment, Storage, and Disposal Facility.*
TTF = *Thermal Treatment Facility.*

Table 6-2. Summary of SNL/NM Waste Transportation Activities by Waste Type

Waste Type		Off-Site Transportation[b]
Asbestos	•	• Shipments are made by commercial carrier and prepared by contracted staff under direct Sandia oversight.
Biological or Infectious	•	• Pickups from medical facilities and other shipments are made by commercial carrier and prepared by contracted staff under direct Sandia oversight. • All DOT requirements are met.
Explosive, Hazardous, Industrial Solid, or Unbound Engineered Nanoscale Particles	•	• Shipments are made by commercial carrier and prepared by contracted staff under direct Sandia oversight. • All nonhazardous waste shipments are accompanied by a Bill of Lading. • All hazardous waste shipments are accompanied by a Uniform Hazardous Waste Manifest. • All DOT requirements are met.
Mixed	•	• Shipments are made by commercial carrier and prepared by contracted staff under direct Sandia oversight. • All shipments are accompanied by a Uniform Hazardous Waste Manifest. • Waste is certified on site prior to shipment to certain off-site facilities for disposal. • All DOT requirements are met.
Radioactive	•	• Shipments are made by commercial carrier and may be prepared by contracted staff under direct Sandia oversight. • All shipments are accompanied by a Bill of Lading. • Waste is certified on site prior to shipment to certain off-site facilities for disposal. • All DOT requirements are met.

Table 6-2. Summary of SNL/NM Waste Transportation Activities by Waste Type (Concluded)

Waste Type		Off-Site Transportation[b]
Solid	•	• Shipments are made by commercial carrier and may be prepared or received by contracted staff under direct Sandia oversight. • All waste shipments are accompanied by papers noting the designated landfill, volume, number of bales, and weight of the load. • All DOT requirements are met.
TSCA-regulated	•	• Shipments are made by commercial carrier and prepared by contracted staff under direct Sandia oversight.

[a]*For example, from generators to waste management facilities*

[b]*For example, to treatment and disposal facilities*

DOT = U.S. Department of Transportation.

Sandia = Sandia Corporation.

SNL/NM = Sandia National Laboratories, New Mexico.

TSCA = Toxic Substances Control Act.

Table 6-3. Summary of Chemical Waste Shipped from SNL/NM

Waste Shipped by Category[a]	2005[b]	2006[b]	2007[b]	2008[b]
RCRA Waste				
Hazardous waste	117,935	84,923	62,044	94,570
Hazardous waste (generated by ER Project)	446,016	5,721	0	4
Hazardous waste (recycled)	4,955	NR	4,380	3,682
Total	568,906	90,644	66,424	98,256
TSCA Waste				
PCB (recycled)	4,829	2,327	4,309	9,337
PCB	2,210	53,563	0	3,375
PCB/hazardous waste mixture	939	634	3	17
Total	7,978	56,524	4,312	12,729
Other Chemical Waste[c]				
Infectious Waste	699	564	600	573
Asbestos	173,004	154,900	67,308	161,456
Used Oil	37,897	6,384	13,882	5,373
Other Chemical Waste	328,630	635,579	210,655	209,457
Other chemical waste (generated by ER Project)	36,951	7	0	0
Other (recycled) – various batteries, fluorescent lamps, and non-PCB ballasts, capacitors, and oils	73,763	79,458	56,732	61,631
Total	650,944	876,892	349,177	438,490
Total Waste and Recyclables Shipped	1,227,828	1,024,060	419,913	549,475

[a]Values are in kilograms.

[b]Source: Adapted from SNL/NM Annual Site Environmental Reports (SNL/NM 2006, 2007, 2008, and 2009d) and Suderman 2010.

[c]Chemical waste includes special waste and industrial solid waste

ASER = Annual Site Environmental Report.

ER = Environmental Restoration.

HWMF = Hazardous Waste Management Facility.

NR = Not Reported.

PCB = Polychlorinated biphenyl.

RCRA = Resource Conservation and Recovery Act.

SNL/NM = Sandia National Laboratories, New Mexico.

TSCA = Toxic Substances Control Act (primarily regulates asbestos and PCBs).

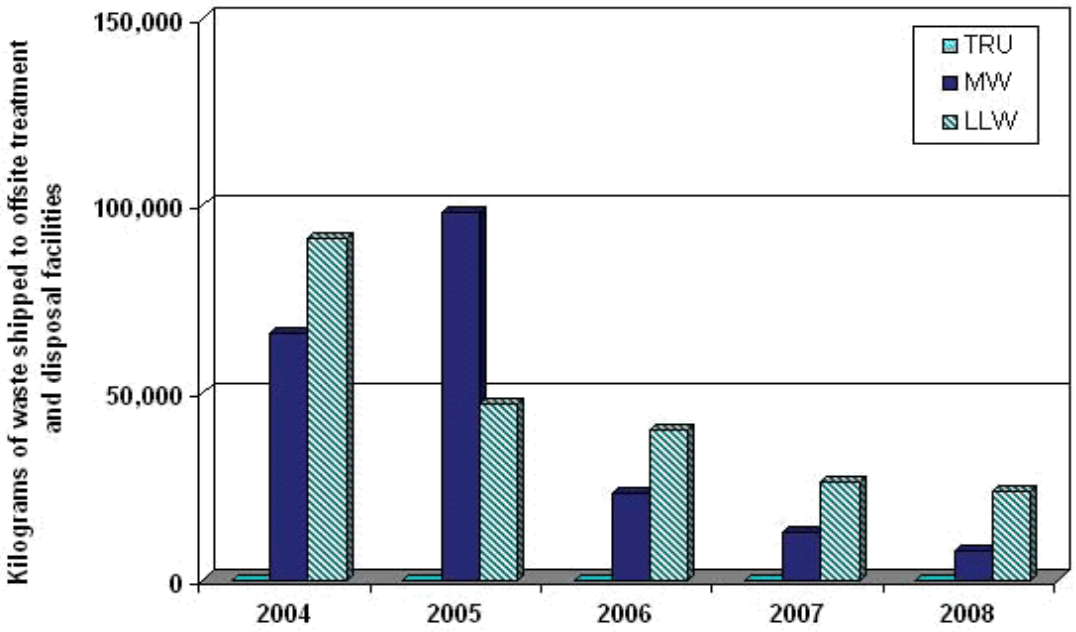

Figure 6-1. Five-Year Summary of Total Radioactive Waste Shipped by SNL/NM

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7. WASTE TREATMENT AND DISPOSAL

Some wastes are treated on site. All wastes (including the residues from wastes treated on site) are sent to off-site facilities for treatment, recycling, and/or disposal. No waste disposal takes place at SNL/NM.

The number of waste shipments to off-site facilities depends on several factors:

- Quantity of waste (both weight and volume)
- Type of waste and applicable regulatory requirements (e.g., time limits on storage at SNL/NM, RCRA treatment requirements)
- Availability of off-site TSDF

All of the requirements listed above are considered in planning waste shipments. In order to meet all applicable regulatory requirements, individual shipments may consist of very small quantities of waste.

7.1 Treatment and Disposal of LLW and MLLW

Both LLW and MLLW (including wastes that were treated on site) are shipped to off-site facilities in several states, as listed in Table 7-1. Although the DOE facility at Hanford, Washington, was included in DOE/EA-1180, *Environmental Assessment* for *Sandia National Laboratories Off-Site Transportation of Low-Level Radioactive Waste* (DOE 1996), this site is now indefinitely closed for off-site disposal.

In the past, the options for treatment and disposal of mixed waste were limited. The *Sandia National Laboratories Mixed Waste Site Treatment Plan of the Federal Facility Compliance Order* (NMED 2008a, SNL 2009b) contains the schedules and planned treatment technologies for the inventory of mixed waste at SNL/NM subject to the FFCO.

7.2 Treatment and Disposal Sites for Hazardous Waste

Some explosive waste is treated on site at the TTF, and the treatment residue is then managed as hazardous waste and sent for off-site disposal. Other explosive wastes are sent to the KAFB Explosives Ordnance Disposal Facility (EOD) for treatment .

The treatment and disposal sites for hazardous waste are evaluated and audited before any waste is shipped. All waste is packaged in accordance with DOT requirements, labeled, placarded, and shipped with a uniform hazardous waste manifest and appropriate LDR certification. Signed manifests designating waste receipt are received from the accepting facility. Most of the hazardous waste shipped off site is incinerated. Noncombustible waste is shipped for treatment as needed followed by land disposal.

Table 7-1. Locations of Off-Site Waste Management Facilities Used by SNL/NM

Waste Type	Service	Recycling (R), Treatment (T), or Disposal (D)		Location
Solid Waste	Landfill	D		Rio Rancho, NM
	Landfill, construction and demolition debris	D		Albuquerque, NM
	Scrap metals	R		Albuquerque, NM
	Scrap metals	R		Albuquerque, NM
	Cardboard, mixed paper	R		Albuquerque, NM
	Paper shred and food composting	R		Albuquerque, NM
	White paper	R		Green Bay, WI
	Wood	R		Albuquerque, NM
Infectious or Biological Waste	Incinerator, rotary kiln	T		Albuquerque, NM
Asbestos	Landfill	D		Mountainair, NM
TSCA-Regulated Waste	Incinerator, rotary kiln	T		Henderson, NV
	Landfill	D		Mountainair, NM
Special Waste, Hazardous Waste, UNP Waste	Incinerator, rotary kiln, cylinders, water reactive deactivation	T		Henderson, NV
	Encapsulation	T		Henderson, NV
	Encapsulation	T		Beatty, NV
	Open detonation, explosives	T		Albuquerque, NM
	Open detonation, explosives	T		Ogden, UT
	Recycle and recover precious metals	R		Santa Clara, CA
	Recycle and recover precious metals	R		Terrell, TX
	Recycle and recover PC parts	R		Terrell, TX
	Recycle and recover lead	R		Terrell, TX
	Recycle used oil	R		Albuquerque, NM
	Recycle and recover fluorescent light tubes and ballasts	R		Phoenix, AZ
	Recycle and recover batteries	R		Phoenix, AZ
	Landfill	D		Henderson NV
	Landfill	D		Grantsville, UT

7.3 Disposal Sites for Transuranic Waste

In September 1999, shipments of TRU waste were first delivered to the Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico. All TRU wastes at SNL/NM must be transferred to Idaho National Engineering Laboratories or Los Alamos National Laboratory for certification to meet the requirements of the WIPP Waste Acceptance Criteria as detailed in DOE/EIS-0200-F, *Final Programmatic Environmental Impact Statement* (DOE 1997a).

At this time, no legacy TRU waste from SNL/NM has been deposited in the WIPP. Approximately seventy containers of TRU waste are currently stored at SNL/NM; these include containers of TRU wastes that were generated at the DOE Inhalation Toxicology Research Institute.

The DOE has established the Off-Site Source Recovery Project (OSRP) to remove excess, unwanted, abandoned, or orphan radioactive sealed sources that pose a potential risk to health, safety, and national security. Sandia has identified inventory at SNL/NM that is potentially suitable for the OSRP.

7.4 Disposal Sites for Solid Waste

Commercial solid waste (only KAFB waste is excluded) from the SWTF is shipped to a permitted municipal waste landfill. The average rate of shipment is four trucks per month. Each truck contains approximately 28 bales of waste that weigh approximately 20 metric tons.

7.5 Summary of Off-Site Waste Management Facilities

Frequently used waste treatment, storage, disposal, destruction, recycle, and repository facilities are located in several states. Vendors are selected based on not only services they provide, but also their environmental compliance records. The vendors and facilities utilized may change at any time, due to business needs.

8. SPECIAL ISSUES

8.1 Legacy Waste

Sandia is in the process of eliminating surplus chemicals and other materials from its inventory. The reasons for the inventory reduction include the following:

- Reduced storage costs, especially for maintenance of inspection teams and completion of supporting documentation required for regulated materials
- Enhanced safety through reducing potential for exposures
- Reduced liability for potential violations of applicable regulatory requirements

The issues associated with legacy materials designating usefulness and potential value, and funding costs for additional characterization that may be required to evaluate suitability for potential applications. Legacy material may be declared waste if there is no use, reapplication, reprocessing, or recycling potential identified within the DOE complex.

The legacy material inventory has decreased substantially over the intervening years since the original SWEIS (DOE 1999) was released due to the legacy material evaluations and the Unneeded Materials and Chemicals Program.

8.2 Environmental Restoration and Long Term Stewardship

8.2.1 Environmental Restoration Overview

Module IV of Permit NM5890110518 contains requirements for corrective action (under HSWA) at SWMUs and AOCs (NMED 2008a). Corrective action at SNL/NM is conducted through Sandia's ER Project. The regulatory requirements are discussed in Section 1.3.5.

Initially, 117 sites were identified. Since then, a total of 500 individual sites, potential sites, or individual historical activities have been identified for investigation. Many of these sites were confirmed to contain little or no contamination of concern. Currently, 33 sites (including the Mixed Waste Landfill) remain on the list of sites for which corrective action is not complete.

The DOE and Sandia propose ER sites to NMED for Corrective Action Complete (CAC) status when they meet NMED criteria for corrective action, either before or after remediation; the criteria include acceptable levels of risk to human health and the environment presented by the contaminants at the site. After NMED grants CAC status, the DOE and Sandia submit a request for a Class III modification to the HSWA Module (Module IV) of Permit NM5890110518-1 (the Permit) requesting that the site be deleted from Table A.1, "List of Solid Waste Management Units (SWMU) and Areas of Concern (AOC) Requiring Corrective Action" and added to Table A.2 "List of Solid Waste Management Units (SWMU) and Areas of Concern (AOC) not currently requiring Corrective Action."

The majority of ER sites are granted CAC status under a risk-based scenario in which risks to human health and the ecosystem are calculated for sites with residual contamination according to

EPA and NMED guidelines. The level of contamination remaining and the appropriate land-use category (i.e., industrial, residential, or recreational use) are used together with the available information and conceptual model for each site to determine the risk to human health and the ecosystem.

In February 2008, the NMED issued the most recent Class III Modification to the Permit (NMED 2008b); the modification addressed 28 sites for which corrective action is complete. The DOE and Sandia submitted a request for a Class III permit modification to address 31 of the remaining 33 sites. The DOE and Sandia are awaiting the determination of whether the NMED will approve the modification for any of the sites.

8.2.2 Long-Term Stewardship

The Long-Term Stewardship (LTS) Program is responsible for providing continuing maintenance of the ER sites for which corrective action is complete and NMED has determined that controls are needed to address the risk associated with residual contamination. LTS includes land-use controls, monitoring, maintenance, and information management to provide mitigation of risk from residual contaminants and regulatory compliance. It is part of the overall LTES Program, which is responsible for providing a corporate-wide process for minimizing adverse environmental impacts from operations at SNL/NM, including new, active, and legacy sites.

8.3 Waste Data

Waste data are collected and used to insure safe and regulatory-compliant processing of the waste.

The generators of waste initiate the process by completing and submitting a disposal request. After all items on a disposal request are characterized, the request is approved for the waste to be picked up.

- Waste parcels may be identified with unique tracking numbers to assist in tracking until shipment to an off-site TSDF.

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APPENDIX A: QUANTITIES OF RADIOACTIVE WASTE STORED AT SNL/NM IN MAY 2010

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Table A-1. Radioactive and Mixed Waste Inventory[a]

Location	Quantity of Waste[b]											
	TRU			MTRU			LLW			MLLW		
			Total			Total			Total			Total
MSB 37034			1,470			81			14			0
MSB 37045			1,840			0			53			0
MSB 37055			68			0						0
MSB 37057			1			NA			1,456			NA
MSB 37063			2,495			NA			2,722			NA
MSB 37078			178			0			1,047			0
MSB 37118			688			55			580			100
RMWMF			37			4			4,134			8,496
Other[c]			298			0			NA			NA
Totals			***7,075***			***140***			***10,006***			***8,596***

[a]*All data are for May 4, 2010.*

[b]*All quantities are in kilograms.*

[c]*On May 4, 2010, four containers of TRU waste were located at another facility for nondestructive examination (radiography) in accordance with the Waste Isolation Pilot Plan Waste Acceptance Criteria.*

LLW = Low level waste.

MLLW = Mixed LLW.

MSB = Manzano Storage Bunker (Manzano Storage Area).

MTRU = Mixed TRU.

NA = Not applicable.

RMWMF = Radioactive and Mixed Waste Management Facility.

TRU = Transuranic.

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