8.13 PBS SR-0013 Solid Waste Stabilization and Disposition

8.13.1 Background

Past nuclear operations at SRS have generated wastes which, for many years, have been stored pending the availability of treatment and disposal facilities. Over the last decade, the inventories of these legacy wastes have been steadily reduced to a fraction of their former magnitude using a variety of treatment and disposal facilities both onsite and offsite. In addition to disposition of legacy wastes, SRS generates new wastes as part of ongoing site EM cleanup work. These newly generated wastes are dispositioned using a variety of treatment and disposal facilities. In order to achieve success in the waste management project, there are also active SRS pollution prevention, waste minimization and waste certification programs. In addition, this project covers surveillance and maintenance activities and deactivation for the Consolidated Incinerator Facility (CIF) project. This project includes current and future waste disposition support for the National Nuclear Security Administration (NNSA) and other programs performing work at SRS.

This project also provides capital funding for general site infrastructure projects in support of all site programs. Also included in the scope of this project are telecommunications, utilities, janitorial support and maintenance in support of DOE users. As the EM cleanup mission has advanced at SRS and nuclear operations facilities have aged, there has been a focused effort to maintain an appropriate level of infrastructure based on the needs of the EM cleanup mission.

8.13.2 End State

All legacy low-level, hazardous, mixed and transuranic (TRU) wastes will be disposed of in compliance with applicable regulations and requirements. SRS newly generated wastes resulting from the EM cleanup project will be disposed of as the waste is generated to prevent a legacy waste problem from being created for future generations. This real-time treatment and disposal of wastes will end approximately six months after final cleanup at SRS is finished.

All waste facilities will be deactivated with the possible exception of portions of the Solid Waste Disposal Facility (SWDF). Once deactivated, facilities will be maintained in a minimal surveillance and maintenance condition until transferred to PBS SR-0040 for final decommissioning or to PBS SR-0030 for final area closure. Portions of SWDF may be needed after FY 2025 to support waste generation of other site programs. If determined to be needed, this facility will be transferred to another DOE program office upon completion of the EM cleanup project at SRS.

Any ongoing site infrastructure support or needed support to DOE users will also be transferred to the appropriate DOE program office.

8.13.3 Scope and Description

This PBS funds the treatment, storage, and disposal of all wastes generated at SRS.

Sanitary waste consists of solid wastes that are neither radioactive nor hazardous as defined by the Atomic Energy Act (AEA) or the Resource Conservation and Recovery Act (RCRA). Sanitary waste consists of materials that would be received by a municipal sanitary landfill and salvageable or recyclable materials. Waste minimization and pollution prevention activities include aluminum can and white office paper recycling, salvage yard recycling, scrap wood chipping/burning, construction material recycling, and the offsite sale of paint and paint products. The combustible portion will be processed to produce fuel cubes that will be used to fire a boiler and is expected to conserve landfill space.

The hazardous waste (HW) and mixed waste (MW) projects involve three primary operations: receipt of waste from on-site generators, interim storage in RCRA regulated storage facilities, and shipment for off-site treatment and disposal. All HW and MW generated at SRS is shipped off-site to commercial facilities for treatment and disposal. There is no on-site RCRA permitted disposal facility.

The low-level waste (LLW) streams are generated from a variety of programs at SRS, plus the Naval Reactors Program and other offsite generators. LLW consists of radioactively contaminated materials including miscellaneous job control waste, small and large equipment, plastic sheeting, soil, and suspect contaminated materials used within radioactive material management areas that cannot be proven to be free of radioactive contamination. The E Area facilities consist of a Low Activity Waste (LAW) vault, an Intermediate Level Vault (ILV), engineered trenches, and components-in-grout and slit trenches. Material awaiting disposition (Contaminated Large Equipment - CLE) that has not been declared waste is being stored.

The historical mission of the transuranic (TRU) waste project has been to receive and safely store TRU waste generated at the SRS and throughout the DOE complex. The focus has shifted to preparation and transportation of waste to the WIPP disposal facility located in Carlsbad, New Mexico. This is accomplished by: (1) characterizing and certifying TRU waste to meet the WIPP waste acceptance criteria (WAC); (2) segregating out wastes that do not meet the WIPP WAC and that can be disposed in a more cost effective manner; and (3) repackaging the waste to meet transportation requirements.

TRU waste is defined by and managed in accordance with DOE Order 435.1. TRU waste is radioactive waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste with half-lives greater than 20 years. The SRS currently stores approximately 10,000 m^3 of TRU waste that was generated as a result of nuclear materials production. SRS TRU waste will be transported overland in TRU Package Transporters, Model II (TRUPACT-II) or enhanced Type B shipping containers (TRUPACT-III) and be disposed of at WIPP.

The Pollution Prevention (P2) Program provides SRS a safe, effective, and environmentally responsible strategy to implement specific waste and pollutant

reduction techniques based on current and projected information on waste generation, waste characterization, and ultimate waste disposal costs.

CIF suspended operations in late FY 2000. Current efforts include surveillance and maintenance activities. CIF will begin deactivation in FY 2006.

This PBS covers other miscellaneous items of work in support of mission operations, including: operational direct support to DOE, U.S. Forest Service, and Savannah River Ecology Laboratory, site housing support, deactivation planning for infrastructure facilities, infrastructure database management, and small capital projects (Capital Equipment and General Plant Projects) for infrastructure support facilities and activities.

8.13.4 Responsibilities

In addition to the overall responsibilities identified in Section 4.3, PBS-specific responsibilities are summarized as follows.

This PBS falls under the responsibility of the DOE-SR Assistant Manager for Waste Disposition Project. In accordance with DOE Order 413.3, *Program and Project Management for the Acquisition of Capital Assets*, a Federal Project Director has been identified to manage this PBS and will be approved by EM-1. The Federal Project Director uses an Integrated Project Team (IPT) approach to manage the PBS. The IPT is comprised of personnel from a wide variety of disciplines to ensure the work is managed safely and effectively.

The performance of the work scope for this PBS is the responsibility of the management and operating (M&O) contractor. Currently, the contractor is Westinghouse Savannah River Company (WSRC). Within WSRC, the responsibility for this work scope resides with the Operations Business Unit Manager.

8.13.5 Schedule

All legacy hazardous, mixed and low-level wastes along with approximately 27,000 TRU waste drums will be dispositioned by end of FY 2006. It is to be noted that legacy mixed low-level waste will be dispositioned with exceptions as specified in *Contract Modification M100*. The remaining TRU inventory of legacy waste will be dispositioned by the end of FY 2009.

Thereafter, the schedule reflects the treatment and disposal of newly-generated wastes normally within one year of receipt by Solid Waste.

As on-site waste disposal facilities are filled, new facilities are built.

Portions of SWDF may be needed after FY 2025 to support waste generation of other site programs. If determined to be needed, this facility will be transferred to another DOE program office upon completion of the EM cleanup project at SRS.

8.13.6 Resources

The cost profile for this PBS for FY 2004 – FY 2025 is TBD.

The previous lifecycle estimate assumed that the transuranic high activity (HA) waste would require a significant Line Item Project. Currently, a series of smaller capital projects would satisfy these needs. HA legacy processing begins in FY 2007 versus FY 2009 in prior submittals. This EM cost profile also assumes acceleration of the TRU low activity legacy waste shipments to WIPP, completing in FY 2006.

Assumptions
The following are GFSI assumptions that have been made for the purposes of this plan:

- Central Certification Project (CCP) will operate and fund SRS drum certification through FY 2006
- Nuclear Regulatory Commission will eliminate the transportation requirement on 20 Ci plutonium limit by second quarter of FY 2005
- Nuclear Regulatory Commission will issue Certificate of Compliance for TRUPACT-III by second quarter of FY 2005
- Nuclear Regulatory Commission will approve TRUPACT-II Safety Analysis Reports for Packaging 20b by third quarter FY 2005
- Non-destructive analysis (NDA) and non-destructive examination (NDE) equipment for large container waste will be provided by first quarter FY 2006 with funding from EM-HQ Office of Environmental Cleanup and Acceleration
- Central Certification Project (CCP) will operate and fund non-drum container certification beginning in the first quarter of FY 2006 and running through FY 2008
- New Mexico Environmental Division will approve the WIPP Class 3 Permit Modification for elimination of head-space gas sampling and visual examination for high activity non-drum waste by second quarter FY 2006.

Government Furnished Services and Items
The following Government Furnished Services and Items and associated assumptions have been identified to support this project:

- LANL glovebox is provided to SRS by August 12, 2004
- Identify receiver sites for LLW, MW and HW.

Technology Needs
In addition to the aforementioned resource requirements, the following technology needs have been identified in support of accelerated cleanup:

- Increase TRU waste transportation system curie, size and weight limits.
  Benefit: Enables technology for some waste containers, reduces costs (across the DOE Complex, potentially $600-800M), and reduces risk
  Development timeframe: FY 2006

- Provide for the capability required for the visual inspection, sorting, segregating, and repackaging of Pu-239 and Pu-238, and potentially remote handled wastes currently stored in 55- and 83-gallon drums and large black boxes to satisfy WIPP requirements.

Benefit: Enables technology/reduces costs from continual storage/meets regulatory commitment
Development timeframe: FY 2006

- Conduct performance assessment modeling for Pu-238 disposal alternatives.
  Benefit: allows cost-effective disposal while protecting the environment ($180M savings)
  Development timeframe: FY 2004 – FY 2005

- Provide for the treatment of high-activity TRU (Pu-238) waste for destruction of organic constituents or implementation of hydrogen getter technology.
  Benefit: Allows shipment of higher Pu-238 loaded material to WIPP, enabling technology/reduces risks
  Development timeframe: FY 2004 – FY 2005

- Provide state-of-the-art TRU processing/treatment capabilities, including the installation of the Remote Operations Size Reduction System, to allow SRS to accelerate preparation and shipment of high-activity Pu-238/Pu-239 waste and bulk containers to WIPP.
  Benefit: Accelerates risk reduction and lifecycle cost saving of over $800 million.
  Development timeframe: Multiyear capital program from FY 2004 – FY 2007

8.13.7 Key Assumptions, Agreements, Alternatives, Trade-offs, and Risk Management

Key Assumptions
The following key assumptions have been used as the basis for the lifecycle cost and schedule development:

- EM will only operate Solid Waste facilities through the completion of the EM mission
- EM will continue to provide Solid Waste and Infrastructure services to non-EM waste generators through FY 2025
- SRS will meet or exceed the WIPP transportation baseline
- Infrastructure and Site Services should be assumed to be sized and maintained consistent with identified EM needs and requirements
- Infrastructure support to DOE users will continued to be provide through the end of FY 2025.

Agreements
The following agreement is driver for this project:

- *Site Treatment Plan*

Alternatives, Trade-offs, and Risk Management

Risks
The following risks have been identified for this PBS:

- Determination that waste that has been historically managed as TRU waste, with activity levels between 10 and 100 nCi/g cannot be disposed at the WIPP facility
- Failure to deliver GFSI for TRU transport containers, characterization equipment and characterization resources will significantly delay the TRU disposition program
- Failure to identify a disposal facility for greater that class A treated mixed waste
- Treatment and/or disposal options for waste with no identified path for disposal
- Failure of infrastructure system due to aging facilities.

Alternative
The following alternative has been identified for this PBS:

- NNSA and other site programs could be required to provide funding to support disposition of wastes generated by other programs. This would result in reduced EM lifecycle cost.

8.13.8 Performance Monitoring and Evaluation

8.13.8.1 HQ Monitoring and Evaluation

Monitoring of this PBS at the HQ level is completed primarily through use of the Integrated Planning, Accountability, and Budget System (IPABS) system. Actual cost, schedule, and performance data are collected for each PBS and compared to the established baseline. All elements of the lifecycle baseline are under EM-HQ configuration control. Performance data include the Gold Metrics and the Budget Milestones. Progress toward these measures and any proposed changes to them are provided as follows.

Gold Metrics

Transuranic Waste Shipped for disposal at WIPP: m^3

Year	Current Baseline	Proposed
Pre FY04	1,459	1,410
FY 2004	840	1,814
FY 2005	840	1,814
FY 2006	840	1,337
FY 2007	840	0
FY 2008	840	5,572
FY 2009	1,776	539
FY 2010	1,843	509
FY 2011	1,932	579
FY 2012	1,381	650
FY 2013	1,381	650
FY 2014	640	650
FY 2015	171	650

FY 2016	171	650
FY 2017	123	643
FY 2018	123	295
FY 2019	123	295
FY 2020	123	295
FY 2021	123	295
FY 2022	36	59
FY 2023	36	59
FY 2024	36	59
FY 2025	72	59
Lifecycle Total	15,326	18,885

Basis for change: Current baseline was developed assuming disposition of legacy waste through FY 2013. Since then, disposition of legacy is to complete in FY 2008.

Low-Level and Mixed Low-Level Waste disposed: m^3

Year	Current Baseline	Proposed
Pre FY04	59,740	53,256
FY 2004	10,744	37,305
FY 2005	10,364	21,042
FY 2006	7,372	20,223
FY 2007	67,902	7,556
FY 2008	4,671	7,414
FY 2009	4,447	8,049
FY 2010	3,741	6,323
FY 2011	14,908	6,431
FY 2012	14,908	16,054
FY 2013	14,908	16,108
FY 2014	14,946	6,354
FY 2015	14,945	69,890
FY 2016	9,998	5,530
FY 2017	9,998	3,026
FY 2018	9,998	3,001
FY 2019	9,997	3,001
FY 2020	1,914	3,007
FY 2021	1,625	1,680
FY 2022	1,624	1,679
FY 2023	1,624	1,699
FY 2024	1,624	1,678
FY 2025	1,624	1,720
Lifecycle Total	233,882	248,767

Note: The current baseline includes only waste from operations. The proposed includes waste from D&D, ER, and operations. This is important because it is a deviation from the previous Gold Metric that excluded D&D/ER.

Basis for Change:

- D&D waste in FY 2004 is over three times the volume of operational waste. This waste is managed onsite the same as non-D&D waste and in some cases is commingled with job control waste. Separating D&D, ER, and operational waste does not accurately reflect SR's waste volumes and is not practical with SR's data system.
- Current baseline did not reflect scope of new contract. The proposed quantities reflect scope of contract.

Budget Milestones

Milestone	Proposed	Current
Complete 144 shipments of transuranic waste to the Waste Isolation Pilot Plant (4,000 drums/840 m^3)	09/30/2004	09/30/2004
Dispose of 10,744 m^3 of low-level waste/mixed low-level waste	Deleting	09/30/2004
Complete 144 shipments of transuranic waste to the Waste Isolation Pilot Plant (4,000 drums/840 m^3)	09/30/2005	09/30/2005
Dispose of 10,364 m^3 of low-level waste/mixed low-level waste	Deleting	09/30/2005

Basis for change:
N/A.

8.13.8.2 Site Monitoring and Evaluation

Refer to Section 4.3 for a description of the site's performance monitoring and evaluation process.