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CERTIFIED MAIL

June 27, 2012

Mr. David Hoel
Environmental Quality Management Division
US Department of Energy
Savannah River Operations Office
P.O. Box A
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Dear Mr. Hoel:

SUBJECT: Savannah River Site (SRS) Site Treatment Plan (STP) 2011 Annual Update
(S. Southern to R. Haynes, 11/11/11)

The Operations Engineering Section of the Bureau of Land and Waste Management of the South Carolina Department of Health and Environmental Control (SCDHEC, Department) have reviewed the Approved Site Treatment Plan (STP) 2011 Annual Update and revised pages submitted in a letter dated November 11, 2011. The Department hereby provides approval of this document with revised pages.

If you have any questions regarding this matter, please contact me at (803) 896-4191.

Sincerely,

Lynne D. Garner
Operations Engineering Section
Division of Waste Management
Bureau of Land and Waste Management

Cc: R. Haynes, SCDHEC, Columbia
R. Wingard, SCDHEC, Columbia
J. Hughes, SCDHEC, Aiken

Savannah River Site Approved Site Treatment Plan, 2011 Annual Update

Volumes I and II

**Savannah River Nuclear Solutions, LLC
Savannah River Site
Aiken, SC 29808**

PREPARED FOR THE U. S. DEPARTMENT OF ENERGY UNDER CONTRACT NO. DE-AC09-08SR22470

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Savannah River Site Approved Site Treatment Plan, 2011 Annual Update (U)

Prepared By:
Savannah River Nuclear Solutions, LLC
Savannah River Site
Aiken, SC 29808

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Printed in the United States of America
Prepared for
U. S. Department of Energy
and
Savannah River Nuclear Solutions, LLC
Aiken, South Carolina

Savannah River Site Approved Site Treatment Plan, 2011 Annual Update (U)

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Savannah River Site Approved Site Treatment Plan, 2011 Annual Update

Volume I

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CHAPTER 1. PURPOSE AND SCOPE OF THE COMPLIANCE PLAN VOLUME

For each facility at which the U.S. Department of Energy (DOE) generates or stores mixed wastes, Section 3021(b) of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. 6721, as added by Section 105(a) of the Federal Facility Compliance Act (P. L. 102-386, the FFCAct), requires DOE to devise a plan for developing treatment capacities and technologies to treat mixed waste. Upon submission of a plan to the South Carolina Department of Health and Environmental Control (SCDHEC), the FFCAct requires SCDHEC to solicit and consider public comments, and approve, approve with modification, or disapprove the plan, within six months. The agency is to consult with the U.S. Environmental Protection Agency (EPA) and any state in which a facility affected by the plan is located. Upon approval of a plan, SCDHEC shall issue an order requiring compliance with the approved plan (Order).

DOE has prepared the Site Treatment Plan (STP) for Savannah River Site (SRS) mixed wastes in accordance with RCRA Section 3021(b), and SCDHEC has approved the STP (except for certain offsite wastes) and issued an order enforcing the STP commitments in Volume I. DOE and SCDHEC agree that this STP fulfills the requirements contained in the FFCAct, RCRA Section 3021, and, therefore, pursuant to Section 105(a) of the FFCAct (RCRA Section 3021(b) (5)), DOE's requirements are to implement the plan for the development of treatment capacities and technologies pursuant to RCRA Section 3021.

Emerging and new technologies not yet considered may be identified to manage waste more safely, effectively, and at lower cost than technologies currently identified in the plan. DOE will continue to evaluate and develop technologies that offer potential advantages in public acceptance, privatization, consolidation, risk abatement, performance, and life-cycle cost. Should technologies that offer such advantages be identified, DOE may request a revision/modification of the STP in accordance with the provisions of Consent Order 95-22-HW.

The *Compliance Plan Volume* (Volume I) identifies project activity schedule milestones for achieving compliance with Land Disposal Restrictions (LDRs). Information regarding the technical evaluation of treatment options for SRS mixed wastes is contained in the *Background Volume* (Volume II). The 2006 update of the STP serves as an archive reference for Volume II, Chapters 1, 2, 7, 8, 9, 10, and 12, which no longer require an annual update.

Changes to the STP will be made in accordance with the provisions of Consent Order 95-22-HW.

Table 1.1 is a user's guide to Chapters 3, 4, and 5 and serves as an aid in reviewing waste stream information in the STP. The table provides the status of each waste stream, the preferred option (PO), and the primary location(s) of the waste streams in Volumes I and II of the STP. Waste streams that have been eliminated, combined, are in compliance, or will be in compliance by November 15, 2011, do not appear in Volume I other than in this table.

In 1995, DOE Headquarters expanded the scope of the master complex-wide database used to maintain mixed waste inventory data and to generate the 1995 Mixed Waste Inventory Report (MWIR). Non-mixed transuranic (TRU) data was incorporated into the database, which was re-named the Material Inventory and Tracking Information (MITI) database. With the expansion of the database, certain non-mixed TRU waste streams were assigned waste stream numbers SR-W074 through SR-W076. Maintenance of the database on a complex-wide basis was discontinued after fiscal year 1996. Waste stream numbers for future SRS mixed waste streams are expected to remain sequential.

Table 1.1 User's Guide to Chapters 3, 4, and 5

Waste Stream No.	Waste Stream Name	Preferred Option (PO)	Volume I Section Identification	Volume II Section Identification	Waste Stream Status
SR-W001	Rad-Contaminated Solvents	Combustion at Commercial Facility	3.1.2.6	3.1.2.6	Waste Stream Treated
SR-W002	Rad-Contaminated Chlorofluorocarbons	Consolidated with SR-W001	N/A	Table 11.1	Consolidated with SR-W001
SR-W003	Solvent-Contaminated Debris (Low-level waste [LLW])	Thermal Treatment, Macroencapsulation or Stabilization and/or alternative debris treatment at Commercial Vendor Facility	N/A	3.1.2.6	Consolidated with SR-W062
SR-W004	M-Area Plating Line Sludge from Supernate Treatment	Consolidated with SR-W037	N/A	Table 11.1	Consolidated with SR-W037
SR-W005	Mark 15 Filtercake	Stabilization by Vitrification–M-Area Vendor Treatment Facility	N/A	3.5.3	Waste Stream Treated
SR-W006	Contact-handled (CH) Mixed TRU/Liquids	Characterization at SRS–Waste Isolation Pilot Plant (WIPP) Disposal	4.1	4.2.2	Awaiting Characterization
SR-W007	Savannah River National Lab (SRNL) Sample Material	Waste Stream Eliminated	N/A	Appendix to Chapter 3	Waste Stream Eliminated
SR-W008	Separations Area Sample Receipts from SRNL	Consolidated with SR-W017	N/A	Appendix to Chapter 3	Consolidated with SR-W017
SR-W009	Silver-Coated Packing Material	Characterization at SRS–WIPP Disposal	4.1	4.2.2	Further Radiological Characterization Required
SR-W010	Scintillation Solution	Consolidated with SR-W001	N/A	Table 11.1	Consolidated with SR-W001
SR-W011	Cadmium-Coated High Efficiency Particulate Air (HEPA) Filters	Scrap Metal Exclusion	N/A	Appendix to Chapter 3	Recycled under Scrap Metal Exclusion
SR-W012	Toxic Characteristic Solids	Thermal Treatment, Macroencapsulation or Stabilization and/or alternative debris treatment at Commercial Facility	N/A	3.1.2.6	Consolidated with SR-W062 and W088
SR-W013	LLW Lead – To be Decontaminated Onsite	Reclassified as material in use	N/A	3.5.4	Waste Stream Eliminated
SR-W014	Elemental (Liquid) Mercury – Sitewide	Amalgamation-Offsite Commercial Vendor	3.1.2.4	3.1.2.4	Ongoing Treatment

Waste Stream No.	Waste Stream Name	Preferred Option (PO)	Volume I Section Identification	Volume II Section Identification	Waste Stream Status
SR-W015	Tritium-Contaminated Equipment	Macroencapsulation in Stabilization/Solidification Container as 90-Day Generator	N/A	Appendix to Chapter 3	Ongoing Treatment
SR-W016	221-F Canyon High-Level Radioactive Liquid Waste/Low-Level Radioactive Liquid Waste	Vitrification at Defense Waste Processing Facility (DWPF) / solidification in Saltstone Facilities	5	5	Ongoing Treatment
SR-W017	H-Canyon High-Level Radioactive Liquid Waste / Low-Level Radioactive Liquid Waste	Vitrification at DWPF / solidification in Saltstone Facilities	5	5	Ongoing Treatment
SR-W018	Listed Incinerable Solids	Combustion at Commercial Facility or Macroencapsulation or Stabilization at Commercial Facility	3.1.2.6	3.1.2.6	Waste Stream Treated
SR-W019	244-H Receiving Basin for Offsite Fuel (RBOF) High Activity Liquid Waste	Consolidated with SR-W017	N/A	Table 11.1	Consolidated with SR-W017
SR-W020	Salt Processing Filters	Future Generation - Treatment to be Determined	N/A	Appendix to Chapter 3	Future Generation
SR-W021	Poisoned Catalyst Material	Waste Stream Eliminated	N/A	Table 11.1	Waste Stream Eliminated
SR-W022	DWPF Benzene	Waste Stream Eliminated	N/A	Table 11.1	Waste Stream Eliminated
SR-W023	Cadmium Safety/Control Rods	Macroencapsulation in a Cask as a 90-Day Generator	N/A	Appendix to Chapter 3	Complies with LDR
SR-W024	Mercury/Tritium Gold Traps	Meets LDR Treatment Standard	N/A	Appendix to Chapter 3	Complies with LDR
SR-W025	Solvent/TRU Job Control Waste <100 nCi/g	Characterization at SRS	N/A	4.2.1.2	Consolidated with SR-W091
SR-W026	CH Mixed TRU/Thirds	Characterization at SRS-WIPP Disposal	N/A	4.2.1.1	Consolidated with SR-W027
SR-W027	CH Mixed TRU	Characterization at SRS-WIPP Disposal	4.1	4.2.1.1	Awaiting Treatment
SR-W028	Mark 15 Filter Paper	Combustion at Commercial Facility or Macroencapsulation or Stabilization at Commercial Facility	N/A	3.5.1	Waste Stream Treated
SR-W029	M-Area Sludge Treatability Samples	Waste Stream Treated	N/A	3.5.3	Waste Stream Treated
SR-W030	Spent Methanol Solution	Consolidated with SR-W001	N/A	Table 11.1	Consolidated with SR-W001

Waste Stream No.	Waste Stream Name	Preferred Option (PO)	Volume I Section Identification	Volume II Section Identification	Waste Stream Status
SR-W031	Uranium/Chromium Solution	Stabilization by Vitrification at M-Area Vendor Treatment Facility	N/A	3.5.3	Waste Stream Treated
SR-W032A	Mercury-Contaminated Heavy Water	Waste Stream Eliminated	N/A	3.5.2	Waste Stream Eliminated
SR-W032B	Mercury-Contaminated Heavy Water Residues	Solidification in container as a 90-day generator	N/A	Appendix to Chapter 3	Complies with LDR
SR-W033	Thirds/TRU Job Control Waste <100 nCi/g	Characterization at SRS	N/A	4.2.1.2	Consolidated with SR-W091
SR-W034	Calcium Metal	Deactivation by Commercial Vendor	N/A	3.1.2.7	Consolidated with SR-W081
SR-W035	Mixed Waste Oil-Sitewide	Thermal Treatment at Commercial Facility	N/A	3.1.2.6	Consolidated with SR-W001
SR-W036	Tritiated Oil with Mercury	Treatment by Aging followed by Combustion	N/A	3.4	Awaiting Treatment
SR-W037	M-Area Plating Line Sludges	Stabilization by Vitrification at M-Area Vendor Treatment Facility	N/A	3.5.3	Waste Stream Treated
SR-W038	Plating Line Sump Material	Stabilization by Vitrification at M-Area Vendor Treatment Facility	N/A	3.5.3	Waste Stream Treated
SR-W039	Nickel Plating Line Solution	Stabilization by Vitrification at M-Area Vendor Treatment Facility	N/A	3.5.3	Waste Stream Treated
SR-W040	Listed Stabilized Sludge/Listed LDR – Compliant Debris	Waste Stream Treated in Compliance with LDR	N/A	Appendix to Chapter 3	Waste Stream Treated
SR-W041	Aqueous Mercury and Lead	Effluent Treatment Project	N/A	Appendix to Chapter 3	Waste Stream Treated
SR-W042	Paints and Thinners	Thermal Treatment Macroencapsulation or Stabilization at Commercial Facility	N/A	3.1.2.6	Consolidated with SR-W001
SR-W043	Lab Waste with Tetraphenyl Borate	Consolidated with SR-W012	N/A	Table 11.1	Consolidated with SR-W012
SR-W044	Tri-Butyl-Phosphate & n-Paraffin-TRU	Consolidated with SR-W045A & B	N/A	Table 11.1	Consolidated with SR-W045
SR-W045A	PUREX Aqueous Waste	Waste Stream Eliminated	N/A	Table 11.1	Waste Stream Eliminated
SR-W045B	PUREX Organic Waste	Waste Stream renamed SR-W045	N/A	Table 11.1	Waste Stream renamed SR-W045
SR-W045	PUREX Organic Waste	Solidification using new technology	3.2.3	3.2.3	Ongoing Treatment

Waste Stream No.	Waste Stream Name	Preferred Option (PO)	Volume I Section Identification	Volume II Section Identification	Waste Stream Status
SR-W046	Consolidated Incineration Facility Ash	Waste stream eliminated	N/A	Appendix to Chapter 3	Waste Stream Eliminated
SR-W047	Consolidated Incineration Facility Blowdown	Waste Stream Eliminated	N/A	Appendix to Chapter 3	Waste Stream Eliminated
SR-W048	Soils from Spill Remediation	Stabilization by Commercial Vendor	3.1.2.5	3.1.2.5	Waste Stream Treated
SR-W049	Tank E-3-1 Cleanout Material	Waste stream eliminated	N/A	Table 11.1	Waste Stream Eliminated
SR-W050	Waste to Support High-Level Waste (HLW) Processing Demonstrations	Treatment by SRNL as a 90-Day Generator	N/A	Appendix to Chapter 3	Complies with LDR
SR-W051	Spent Filter Cartridges and Carbon Filter Media	Thermal Treatment, Macroencapsulation or Stabilization and/or alternative debris treatment at Commercial Facility	N/A	3.1.2.6	Consolidated with SR-W062
SR-W052	Cadmium-Contaminated Glovebox Section	Waste Stream Eliminated	N/A	Table 11.1	Waste Stream Eliminated
SR-W053	Rocky Flats Ash	Characterization at SRS–Ship to WIPP	4.1	4.2.2	Waste Stream Treated
SR-W054	Enriched Uranium Contaminated with Lead	Consolidated with SR-W037	N/A	Table 11.1	Consolidated with SR-W037
SR-W055	Job Control Waste Containing Solvent Contaminated Wipes	Thermal Treatment, Macroencapsulation or Stabilization at Commercial Facility	3.1.2.6	3.1.2.6	Waste Stream Treated
SR-W056	Job Control Waste with Enriched Uranium and Solvent Contaminated Wipes	Waste Stream Re-characterized	N/A	Table 11.1	Waste Stream Eliminated
SR-W057	D-Tested Neutron Generators	Waste Stream Eliminated	N/A	Table 11.1	Waste Stream Eliminated
SR-W058	Mixed Sludge Waste with Mercury from DWPF Treatability Studies	Treatment by SRNL as a 90-Day Generator	N/A	Appendix to Chapter 3	Treated to meet LDR
SR-W059	Tetrabutyl Titanate (TBT)	Consolidated with SR-W001	N/A	Table 11.1	Consolidated with SR-W001
SR-W060	Tritiated Water with Mercury	Macroencapsulation in a Steel Container via a Treatability Variance	3.1.2.4	3.1.2.4	Treated offsite
SR-W061	DWPF Mercury	Consolidated with SR-W068	N/A	Table 11.1	Consolidated with SR-W068
SR-W062	Normal Low-Level Contaminated Debris	Macroencapsulation or stabilization by a commercial vendor and/or alternative debris treatment at an offsite facility	3.1.2.2	3.1.2.2	Waste Stream Treated

Waste Stream No.	Waste Stream Name	Preferred Option (PO)	Volume I Section Identification	Volume II Section Identification	Waste Stream Status
SR-W063	Macroencapsulated LLW (TC)	Meets Treatment Standard	N/A	Appendix to Chapter 3	Consolidated with SR-W040
SR-W064	Investigation Derived Waste (IDW) Soils/Sludges/Slurries	Awaiting Record of Decision (ROD), etc.	N/A	Table 11.1	Consolidated with SR-W088
SR-W065	IDW Monitoring Well Purge/Development Water	Awaiting ROD, etc.	N/A	Table 11.1	Consolidated with SR-W071 and W077
SR-W066	IDW and Remediation Debris	Awaiting ROD, etc.	N/A	Table 11.1	Consolidated with SR-W062
SR-W067	IDW and Remediation Personal Protective Equipment (PPE) Waste	Awaiting ROD, etc.	N/A	Table 11.1	Consolidated with SR-W062
SR-W068	Elemental (Liquid) Mercury–Sitewide	Consolidated with SR-W014	N/A	Table 11.1	Consolidated with SR-W014
SR-W069	LLW Lead – To be Macro-encapsulated Offsite	Macroencapsulation by a commercial vendor at an offsite facility	3.1.2.3	3.1.2.3	Ongoing Treatment
SR-W070	Mixed Waste from Laboratory Samples	Combustion at Commercial Vendor Facility or Macroencapsulation or Stabilization at Commercial Vendor Facility	N/A	3.1.2.6	Consolidated aqueous with SR-W071 or W077 and organic with SR-W001
SR-W071	Wastewater Suitable for Thermal treatment or Stabilization	Thermal Treatment or stabilization at Commercial Vendor Facility	3.1.2.6	3.1.2.6	Waste Stream Treated
SR-W072	Supernate or Sludge Contaminated Debris from HLW Operations	Extraction or Immobilization Alternative Debris Technologies as a 90-Day Generator	N/A	Appendix to Chapter 3	Complies with LDR
SR-W073	Cadmium-Containing Raschig Rings	Macroencapsulation by Commercial Vendor Offsite via Treatability Variance or stabilization at Commercial Vendor Facility	3.1.2.5	3.1.2.5	Waste Stream Treated
SR-W077	Aqueous Characteristic Wastewater	Ion Exchange, Filtration, and/or Stabilization at F/H Effluent Treatment Project (ETP), Saltstone, or Commercial Vendor	N/A	Section 3.1.1.1.	Ongoing Treatment
SR-W078	LDR Hazardous Waste Awaiting Radiological Screening	Waste Stream Eliminated	N/A	Appendix to Chapter 3	Waste Stream Eliminated

Waste Stream No.	Waste Stream Name	Preferred Option (PO)	Volume I Section Identification	Volume II Section Identification	Waste Stream Status
SR-W079	Polychlorinated Biphenyl (PCB) Mixed Waste	Combustion at the East Tennessee Technology Park (ETTP) Toxic Substances Control Act (TSCA) Incinerator or vendor alternate debris	3.1.2.1	3.1.2.1	Waste Stream Treated
SR-W080 (CN-W001, CN-W004)	Charleston Naval Shipyard Waste	Thermal Treatment or Macroencapsulation or Stabilization at Commercial Vendor	N/A	3.1.2.6	Waste Stream Eliminated
SR-W081	Reactive/Ignitable Waste	Deactivation followed by stabilization or combustion at Commercial Vendor	3.1.2.6	3.1.2.6	Waste Stream Treated
SR-W082	Radioactive Chemicals, Metals, and Pesticides (CMP) Soil	Stabilization by Commercial Vendor	3.1.2.5	3.1.2.5	Waste stream Treated
SR-W083	Mercury- and Chromium-Contaminated Residues	Waste Stream Re-Characterized	N/A	Table 11.1	Waste Stream Eliminated
SR-W084	Remediation Waste Soils that Meet LDR	Meets Treatment Standard	N/A	Table 11.1	Consolidated with SR-W040
SR-W085	Rocky Flats Plutonium Fluoride Residues	Waste not received, sent to WIPP from Rocky Flats	N/A	Table 11.1	Waste Stream Eliminated
SR-W086	Characteristically Hazardous Non-Incinerable Solids	Amalgamation at Commercial Vendor	3.1.2.4	3.1.2.4	Waste Stream Treated
SR-W087 (BT-W035, part of BT-W003)	Bettis Atomic Power Laboratory Contaminated Oil	Thermal Treatment or Stabilization at Commercial Facility	3.1.2.6	3.1.2.6	Waste stream treated
SR-W088	Sludges and Non-Debris Solids	Stabilization by Commercial Vendor	3.1.2.5	3.1.2.5	Waste Stream Treated
SR-W089	TRU Mixed Waste from Mound Site	Characterization at SRS – WIPP Disposal	4.1	4.2.2	Awaiting Treatment
SR-W090	Elemental Mercury – High Rad	Treatment by aging F/B mercury treatment	3.4	3.4	Waste Stream Treated
SR-W091	Contaminated Debris (High Rad)	Macroencapsulation and disposal at Nevada Test Site	N/A	3.1.3	Waste Stream Treated
SR-W092	TRU Mixed Waste from Battelle Columbus Site	Characterization at SRS – WIPP Disposal	4.1	4.2.2	Ship to WIPP

Some waste streams may be only briefly mentioned if they have been treated to meet LDR standards, re-characterized, or consolidated. Only the waste streams that require a schedule and a compliance order will be found in the *Compliance Plan Volume*. Waste streams not found in the *Compliance Plan Volume* have been re-characterized, combined, or are in compliance with applicable regulations.

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CHAPTER 2. KEY ORDER PROVISIONS

Implementation of the STP will be by SCDHEC Consent Order 95-22-HW (Order). The purpose of this chapter is to reiterate key provisions of the Order.

2.1 Definitions

- a. **Project Activity Schedule(s)** shall mean the plan in the STP for performing key activities in support of mixed waste treatment(s). Project activity schedules will be provided in Chapters 3 through 5 of this volume in accordance with Section 3021(b) (1) (B) (ii) of the FFCAct.
- b. **Milestone(s)** shall mean those specific date(s) or time frame(s) within the STP project activity schedule(s) that constitute the steps to which DOE is committed in providing treatment of its mixed waste.
- c. **Cleanup Credits** shall mean activities performed by DOE as identified in the Statement of Mutual Understanding "Site Treatment Plan Cleanup Credits."
- d. **Day(s)** are defined as calendar days; activities defined as occurring within a given quarter shall be completed by the last day of the quarter.
- e. **Revision(s)** shall mean a change to the STP, which includes but is not limited to the addition of a treatment facility, treatment capacity, or technology development not previously included in this compliance plan volume.
- f. **Modification(s)** shall mean a change to the STP that does not constitute a revision.
- g. **Mixed Waste(s)** shall mean waste that contains both hazardous wastes and source, special nuclear, or byproduct materials subject to the Atomic Energy Act of 1954 (42 2011 U.S.C. et seq.).
- h. **Fiscal Year (FY)** shall mean the Federal fiscal year, which begins October 1 and ends September 30.

2.2 Project Activity Schedules

The schedules identified in Chapters 3, 4, and 5 represent DOE's plan for treating the Site's mixed waste. Changes to these schedules require SCDHEC approval. Appendix A represents those schedule activities that occur in the upcoming Federal fiscal year and that DOE agrees are enforceable commitments unless otherwise proposed by DOE and approved by SCDHEC. Cleanup Credits, as established in the Statement of Mutual Understanding- Site Treatment Plan Cleanup Credits, may be used to achieve compliance with enforceable STP commitments. Appendix B represents those schedule activities planned to occur in the subsequent two Federal fiscal years. During the STP annual update process, Chapters 3, 4, and 5 schedule activities will be moved into Appendix B, and Appendix B activities will be moved to Appendix A as scheduled unless otherwise proposed by DOE and approved by SCDHEC.

During the annual budget planning process, DOE will seek funding by submitting a target budget request and identifying any additional funding required to accomplish activities identified in Appendix B as occurring in the upcoming Federal fiscal year plus one. Additionally, DOE will evaluate the funding status of the activities identified in Appendix B as occurring in the upcoming Federal fiscal year plus two and those activities identified in Appendix A.

If a funding shortfall is identified for Appendix A or B activities, DOE shall notify SCDHEC and attempt to resolve the shortfall through obtaining additional funds, reprioritization, and/or implementing improved operating efficiencies. If the funding shortfall for Appendix A is not resolved, DOE will request a schedule modification or revision, as appropriate.

2.3 Covered Matters

Applicability

Except as specifically set forth elsewhere, this plan shall apply to the RCRA LDR requirements pertaining to past, ongoing, and future generation, storage, and treatment of mixed waste at SRS, the hazardous component of which is

subject to the LDRs. LDR requirements can be found in the South Carolina Hazardous Waste Management Regulations (SCHWMR) R.61-79.268 and the Code of Federal Regulations, Chapter 40, Part 268.

Mixed Waste Treatment

This plan addresses the development of treatment capacities and technologies for treating or otherwise managing SRS mixed wastes in accordance with the RCRA LDR regardless of the time when the mixed waste was generated. For the purpose of this plan, covered mixed waste shall mean mixed waste not excluded by the Covered Matters herein.

Exclusions—General

Inasmuch as the intent of the FFCAct is to develop an STP to address compliance with RCRA Section 3004(j), this compliance plan volume shall not address 1) mixed waste being stored or generated at SRS that meets LDR requirements, regardless of when generated; or 2) mixed wastes that are being stored, or will be stored, when generated solely for the purpose of accumulating sufficient quantities of mixed wastes as are necessary to facilitate proper recovery, treatment, or disposal in accordance with SCHWMR 61.-79.268.50. Information pertaining to the status of the mixed waste described above is provided in the background volume of this STP. By previous agreement with SCDHEC, small (less than 55 gallons) quantities of mixed waste(s) stored in RCRA Satellite Accumulation Areas [R.61-79.262.34(c)] are not subject to R.61-79.268 and are not included in this plan unless requested by SCDHEC.

RCRA/Comprehensive Environmental Response, Compensation, and Liability Act

Corrective actions and response actions shall be addressed by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120 Federal Facility Agreement (FFA) that was negotiated by EPA, DOE, and SCDHEC (effective date August 16, 1993), any RCRA hazardous waste permits issued or to be issued by the State of South Carolina and EPA, orders issued pursuant to Section 3008(h) of RCRA, and/or by an agreement, order, or legal action under CERCLA. SCDHEC and DOE acknowledge that this plan does not address mixed waste subject to corrective actions pursuant to RCRA and response actions pursuant to CERCLA unless waste is removed from the area of contamination and not otherwise subject to the provisions of the RCRA/CERCLA orders or agreements.

Environmental Restoration

This plan excludes 1) environmental restoration mixed wastes derived from RCRA corrective actions and CERCLA response actions that do not involve the land disposal of hazardous wastes (e.g., the placement of remediation wastes into or within a corrective action management unit or area of contamination) and/or 2) mixed waste for which a specific treatment path is included in another existing regulatory agreement (e.g., FFA, mixed aqueous Investigation Derived Waste (IDW) in the SRS IDW Management Plan, or mixed waste with a designated treatment listed in Records of Decision (RODs)/orders), permit or order or modifications thereof. Other environmental restoration mixed waste streams not specifically excluded will be dispositioned in accordance with the strategy provided in Volume II, Section 6.1. If DOE proposes to exclude information on any mixed waste from the STP, that proposal shall be submitted to SCDHEC for approval.

Compliance Issues

This plan does not address RCRA compliance issues other than those issues specifically addressed herein. Therefore, SCDHEC and DOE acknowledge that this plan does not affect the rights of SCDHEC to address any RCRA violations not specifically covered by this plan that exist or may exist at SRS.

2.4 Funding

Process

DOE shall use its best efforts, in accordance with the DOE Federal appropriations process, to request timely funding to meet its obligations under this plan.

Anti-Deficiency Act

No provision herein shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, 31 U.S.C. § 1341.

2.5 Changes to STP

Annual Update

On July 7, 2011 DOE requested a revision to the annual frequency for updating the STP. SCDHEC agreed that DOE shall submit an Annual STP Update to SCDHEC for 2011 and thereafter follow a 5-year frequency of preparing future updates, with the next document being due in 2016. A meeting with SRS and SCDHEC staff will be held annually to discuss the status of the STP. This proposed schedule can be modified if subsequent commitments are identified, and will be reviewed in the annual proposed STP meetings. Updates shall comply with Section 3021(b) of the FFCAct and shall include, but not be limited to, an updated inventory of all mixed waste, the status of all treatment residuals, and an updated implementation schedule. Projections of new mixed waste streams generated, or to be generated, onsite and proposed to be received from offsite shall be included in the Update. A list of all proposed changes to the approved STP, as well as a justification for requesting such changes, shall be provided with the Update. Unless otherwise notified by SCDHEC, DOE shall not propose, in the Update, modifications or revisions to the approved STP that have been previously denied by SCDHEC.

The STP 2011 Update documents storage of 146,262.03 m³ of Mixed Waste as of July 1, 2011 versus 142,901.34 m³ stored in 2010. The volumes on hand are summarized in Volume II Chapter 11 with additional details for TRU and HLW included in Chapters 4 and 5, respectively. .

Previous volumes for Waste Steam SR-W009 (Silver-Coated Packing Material) reported the volume of the containment culvert and not the primary waste container itself. Refinement in accounting practice only reports the primary waste container volume instead on the containment. No SR-W009 waste was shipped.

Also, Volume II Chapter 5 update revised the language for discussions concerning the status of facility, regulatory and budget issues and uncertainties that exist.

Modifications and Revisions

DOE shall submit, for SCDHEC approval, a request for a modification or revision to Volume I of the approved STP for any change unless the change requires notification only. (See Section 2.1 of this volume for definitions of modification and revision.) All requests for modifications or revisions must meet the requirements of Section 3021(b) of the FFCAct. DOE may begin implementation of any modification or revision only upon receipt of written approval by the SCDHEC after appropriate public notice, if required. SCDHEC shall ensure that the public notice requirements of the FFCAct are addressed. The application of cleanup credits to an activity listed in this volume of the STP is not defined as a modification or revision to the STP.

Additional RCRA Permit Identification

If DOE determines that treatment preparation steps such as characterization may require RCRA permits or a RCRA Interim Status Expansion, DOE will submit a revision or modification, as appropriate, to identify proposed permit application submittal dates to be included in Volume I project activity schedules.

Alternate Treatment Strategy

If DOE determines that a proposed treatment strategy is inappropriate, DOE will submit a revision or modification and identify the new proposed strategy.

CHAPTER 3. MIXED LOW-LEVEL WASTE TREATMENT

The sections of this chapter discuss project activity schedules proposed for the treatment of mixed waste in accordance with Section 2.2 of this volume. Refer to Table 1.1 in Chapter 1 of this volume for the user's guide to the waste streams in the STP. The user's guide identifies each waste stream, the PO, and the location where the waste stream is discussed in Volumes I and II. For the purposes of this chapter, all MWIR streams have remained intact with their descriptions. No consolidations of streams or descriptions have been incorporated. The sections of this chapter are divided into treatment categories as follows:

- 3.1 Mixed LLW Streams with Treatment Capacity
- 3.2 Mixed LLW Streams Requiring Technology Development
- 3.3 Mixed LLW Streams for Which Further Characterization is Required
- 3.4 Mixed LLW Streams Requiring Radionuclide Decay Prior to LDR Treatment
- 3.5 Mixed LLW Stream—Other Commitments

3.1 Mixed Low-Level Waste Streams with Treatment Capacity

This section discusses the schedules and plans associated with treatment of SRS mixed waste with currently available treatment capacity. This section of the chapter is divided into treatment categories as follows:

- 3.1.1 Onsite Treatment
- 3.1.2 Offsite Treatment
- 3.1.3 Preferred Treatment to be Determined

3.1.1 Onsite Treatment

SRS has several onsite treatment facilities for treating mixed LLW. These facilities include the F-Area and H-Area Effluent Treatment Project (F/H ETP) and the Saltstone facility. This category also includes treatability variance petition submittals, recycling, and miscellaneous onsite treatments not otherwise mentioned.

3.1.1.1 F-Area and H-Area Effluent Treatment Project

As waste characterizations are reviewed, aqueous characteristic wastes such as those in SR-W041 and SR-W077 may be treated at ETP if appropriate and approved. (See Section 9.1.1 of Volume II for more information.)

3.1.1.2 Onsite Treatment Via Macroencapsulation

Macroencapsulation for debris waste is to be performed within the RCRA-permitted E-Area facility for the following waste stream:

SR-W091, Contaminated Debris (High Rad)

3.1.1.3 Onsite Treatment Via Treatability Variance Submittals

Submittal of a treatability variance for macroencapsulation is the PO for certain mixed waste streams, including the following:

There are currently no waste streams for this treatment standard.

3.1.2 Offsite Treatment

For those waste streams that cannot be accommodated by SRS treatment facilities, various treatment technologies available at offsite facilities have been determined to be the PO. This section discusses the waste streams that are available for offsite treatment. Offsite treatment includes offsite commercial vendor treatment and offsite treatment at other DOE facilities.

3.1.2.1 DOE Thermal Treatment

Combustion at the ETTP TSCA Incinerator or vendor alternate debris technology treatment is the PO for the following waste stream:

SR-W079, Polychlorinated Biphenyl (PCB) Mixed Waste

Approved, equivalent treatment technologies offered by commercial vendors will be considered as they become available.

Estimated Schedule for Treatment of this Waste Stream:

Submit commitment schedule: Completed. Schedule was submitted July 21, 1997. Schedule included the following commitments:

- 1st Phase completed. Comments were resolved on the preliminary application and the formal application for the treatment of SR-W079 was submitted June 9, 1998 (required date 6/3/98). The Residuals Management Contingency Plan (RMCP) was approved by SCDHEC July 2, 1998, contingent upon agreement by the Tennessee Department of Environmental Conservation (TDEC).
- 2nd Phase completed. A shipping and treatment schedule for the PCB mixed waste was submitted July 16, 1999, which was within 90 days of receipt of written approval by the ETTP to accept the waste.
- 3rd Phase completed. A shipment schedule for the PCB mixed waste was submitted July 10, 2002, within 90 days of receipt of written approval by the State of Tennessee on April 15, 2002, to accept the waste.
- 4th Phase completed. Solid PCB mixed waste was shipped on July 30, 2002 (required date was August 30, 2002). Liquid PCB mixed waste was shipped on September 26, 2001. Solid PCB mixed waste currently in storage is being accumulated for future shipment.

3.1.2.2 Commercial Vendor Debris Treatment

Alternate debris technology treatment, or macroencapsulation, or shredding followed by stabilization, at an offsite commercial vendor's facility are the preferred options for certain mixed waste streams, including the following:

SR-W062, Low-Level Contaminated Debris

SR-W091, Contaminated Debris (High Rad)

Estimated Schedule for Treatment of Waste Stream SR-W062

Submittal of applicable permit application(s): Offsite treatment; no SRS permits required.
Issuing Request for Proposal: Completed. The effectiveness of DOE's Broad Spectrum Contract Vendor was evaluated February 20, 2001. No additional Request for Proposal is necessary.

Entering into contract(s): Completed. The Broad Spectrum Contract Vendor was determined to be effective February 20, 2001, for this waste stream. No additional contracts are necessary.

Commencing operations: Completed. Waste acceptance documentation (profile sheet) for the initial shipment was sent to the vendor June 27, 2001. (Required date February 20, 2002.)

Submitting waste processing schedule: Initial phase completed. First shipment was made September 27, 2001 (required date for first shipment schedule was November 22, 2001).

2nd Phase completed. 50% (78.4 m³) of the remaining SR-W062 waste inventory (in RCRA storage buildings on September 30, 2001) was shipped to vendor on July 10, 2002 (required date for shipment was September 30, 2002).

3rd phase completed. 100% of the remaining SR-W062 waste inventory (in RCRA storage buildings on September 20, 2001) was shipped to the vendor by September 15, 2004, in addition to newly generated waste or waste that was transferred from other MWIR waste streams to SR-W062. Since September 30, 2001, a total of 177.35 m³ of waste stream SR-W062 has been shipped for offsite treatment and disposal. Two B-25s of waste, which had originally been placed in this waste stream, were found to contain radiological contamination in excess of the vendor's license limits and have been placed in a new waste stream, SR-W091.

3.1.2.3 Commercial Vendor Lead Treatment

Lead macroencapsulation at a commercial vendor's facility is the PO for certain mixed waste streams, including but not limited to, the following:

SR-W069, LLW Lead – to be Macroencapsulated Offsite

Estimated Schedule for Treatment of Waste Streams SR-W069

Submittal applicable permit application(s): Completed. No treatability variance is necessary, based on EPA and SCDHEC concurrence that radioactive lead-acid batteries are considered "radioactive lead solids."

Issue Request for Proposal: Completed. Request for Proposal issued June 19, 2002 (required date 6/30/02)..

Enter into contract(s): Completed. Contract with a commercial vendor executed on December 12, 2002 (required date December 31, 2002).

Waste Acceptance: Completed. Waste profile sheets for the initial shipment to the offsite vendor were submitted on July 14, 2003 (due date 12/10/03).

Submit Waste Processing Schedule: Phase I Completed. The initial shipment of waste to the offsite vendor was sent September 18, 2003 (due date of shipment schedule was November 5, 2003). Submit a schedule for shipping the remaining waste (in storage as of February 1, 2003) within 24 months of contract execution (December 10, 2004). Completed.

3.1.2.4 Commercial Vendor Mercury Treatment

The PO is direct amalgamation (AMLGM) or stabilization by a commercial vendor, dependent upon vendor states' approval of direct AMALGM for the waste. The following waste streams are in this category:

SR-W014, Elemental (Liquid) Mercury – Sitewide

SR-W060, Tritiated Water with Mercury – The tritiated water with Mercury has been removed from the welded stainless steel container, and shipped to Materials and Energy Corporation on September 2, 2009, to be stabilized.

SR-W068, Elemental (Liquid) Mercury – Sitewide - Consolidated with SR-W014

SR-W086, Characteristically Hazardous Non-Incinerable Solids

Estimated Schedule for Treatment of these Waste Streams

Disposition of these waste streams is contingent upon completion of arrangements with a commercial vendor. See STP Volume II, Chapter 3, Section 3.1.2.4 for additional information.

Enter into contracts: Phase I completed. Procurement established work agreement with Commercial Vendor on March 26, 2003, to treat streams SR-W014, SR-W068, and SR-W086 (due date June 30, 2003). Phase II completed. SRS provided waste characterization data to Commercial Vendor to assure conformance to vendor's waste acceptance criteria on September 23, 2003 (due September 26, 2003).

Submit waste processing schedule: Completed. Within 90 days of receipt of vendor approval of the waste, SRS will submit a shipping schedule for these waste streams.

3.1.2.5 Commercial Vendor Solids Treatment

The PO can include several treatment steps. Wastes that contain organic material in excess of the LDR Treatment Standard are initially treated to separate the organic portion of the contaminants using solvent extraction or thermal separation. The desorbed chemical constituents are then treated via direct chemical oxidation or combustion. The waste material remaining after organics are removed or the non-organic waste material is then either directly stabilized, shredded and stabilized, macroencapsulated or subjected to alternative debris treatment technologies. No stabilization of organics is performed, and no impermissible dilution occurs. Wastes that do not contain significant organics are either directly stabilized, shredded and stabilized, macroencapsulated, or subjected to alternative debris treatment technologies as appropriate under RCRA regulations.

The following waste streams are included in this category:

- SR-W048, Soils from Spill Remediation (stabilization thermal treatment)
- SR-W073, Cadmium-Containing Raschig Rings (shredded and stabilized)
- SR-W082, Radioactive Chemicals, Metals, and Pesticides Soils (stabilization thermal treatment)
- SR-W088, Sludges and Non-Debris Solids (thermal treatment, stabilization)

Estimated Schedule for Treatment of these Waste Streams

Disposition of these waste streams is contingent upon completion of arrangements with a commercial vendor. See STP Volume II, Chapter 3, Section 3.1.2.5 for additional information.

Enter into contracts: Phase I completed. Procurement established work agreement with Commercial Vendor March 26, 2003, to treat streams SR-W048, SR-W073, SR-W082, and SR-W088 (due date September 30, 2003). Phase II completed. SRS provided waste characterization data for streams SR-W048, SR-W082, and SR-W088 to Commercial Vendor to assure conformance to vendor's waste acceptance criteria on September 22, 2003 (due date September 26, 2003). Stream SR-W073 data was submitted May 21, 2004.

Submit waste processing schedule: Completed. Within 90 days of vendor approval of the waste, SRS will submit a shipping schedule to SCDHEC for these waste streams (due date November 23, 2004).

3.1.2.6 Commercial Vendor “Non-PUREX” Treatment

The PO can include several treatment steps. Wastes that contain organic material in excess of the LDR Treatment Standard are initially treated to separate the organic portion of the contaminants using solvent extraction or thermal separation if necessary. The desorbed chemical constituents are then treated via direct chemical oxidation or combustion. The waste material remaining after organics are removed is then either directly stabilized, shredded and stabilized, macroencapsulated or subjected to alternative debris treatment technologies. No stabilization of organics is performed, and no impermissible dilution occurs.

The following waste streams are included in this category, with the likely treatment in parentheses:

SR-W001, Rad-Contaminated Solvents (thermal treatment)

SR-W003, Solvent Contaminated Debris (LLW) (macroencapsulation or stabilization) (Consolidated with SR-W062)

SR-W012, Toxic Characteristic (TC) Solids (macroencapsulation or stabilization) (Consolidated with SR-W062 and SR-W088)

SR-W018, Listed Incinerable Solids (macroencapsulation or stabilization)

SR-W035, Mixed Waste Oil-Sitewide (thermal treatment [aqueous portion stabilized]) (Consolidated with SR-W001)

SR-W042, Paints and Thinners (thermal treatment or stabilization) (Consolidated with SR-W001)

SR-W051, Spent Filter Cartridges and Carbon Filter Media (macroencapsulation or stabilization) (Consolidated with SR-W062)

SR-W055, Job Control Waste Containing Solvent-Contaminated Wipes (macroencapsulation or stabilization)

SR-W070, Mixed Waste from Laboratory Samples (thermal treatment or stabilization) (Consolidated with SR-W001, SR-W071 or SR-W077)

SR-W071, Wastewater Suitable for Thermal Treatment or Stabilization

SR-W081, Reactive Ignitable Wastes (thermal treatment and/or stabilization)

SR-W087, Wastes from Bettis Atomic Power Laboratory (thermal treatment and/or stabilization)

Estimated Schedule for Treatment of these Waste Streams

Complete the Treatment: Backlogged wastes that are identified with the above waste stream numbers shall be treated by 3QFY07. Complete. Notification letter sent to SCDHEC on May, 8, 2007.

3.1.2.7 Commercial Vendor Deactivation Treatment

Deactivation at a commercial vendor is the PO for the following waste streams:

SR-W034, Calcium Metal (Consolidated with SR-W081)

Estimated Schedule for Treatment of this Waste Stream

Enter into contracts:	Procurement to establish work agreement with Commercial Vendor by 2QFY04 (completed February 2, 2004). SRS to provide waste characterization data by 4QFY04 (completed January 27, 2004).
Submit waste processing schedule:	SRS will submit a shipping schedule to SCDHEC by 2QFY05 (shipment completed June 22, 2004).

3.1.3 Preferred Treatment to be Determined

There are no waste streams awaiting preferred treatment determination.

3.2 *Mixed Low-Level Waste Streams Requiring Technology Development*

Due to the complexity of some waste streams, no technologies have been developed to adequately treat the waste. Therefore treatment strategies for some waste streams have not been selected. This section addresses those mixed LLW streams that require technology development for the treatment of the waste stream.

3.2.1 Development of Mobile Unit Technology

Currently, there are no waste streams in this category.

3.2.2 Development of Characterization Technology

The waste stream, SR-W056, Job Control Waste with Enriched Uranium and Solvent-Contaminated Wipes, previously included in this section, has been determined to be nonhazardous. Currently, there are no additional waste streams requiring development of chemical characterization technology.

3.2.3 Development of Treatment Technology

Waste stream SR-W045, PUREX organic waste, was previously planned to be treated by thermal treatment at the Consolidated Incineration Facility (CIF). On June 26, 2006, SCDHEC agreed to transfer closure and decommissioning of CIF to the FFA. The current treatment for waste stream SR-W045 (PUREX) is stabilization followed by macroencapsulation via a site-specific one-time treatability variance granted by EPA-4 on February 26, 2008. This variance was granted as a contingency in the event that the final stabilized form did not meet LDR. This treatment method will allow treatment of this waste stream to be completed on a greatly accelerated time scale and at a considerable cost-savings compared to CIF. SRS has awarded a subcontract to treat SR-W045 beginning in FY08. The waste was shipped to SRS as a provisionally manifested treated mixed waste for interim storage in SRS-permitted facilities pending receipt of analytical results.

Analytical results determined the treated PUREX to be non-hazardous. To facilitate disposal, SRS will shipped the waste to the Nevada Test Site (NTS) provisionally manifested as a mixed waste under an existing profile. Shipments of the treated PUREX to NTS were completed on September 10, 2009.

Estimated Schedule for Treatment of this Waste Stream

SR-W045 shipped to an offsite treatment vendor by December 31, 2009. Complete

SR-W045 shipped out of South Carolina by December 31, 2008. Complete

Schedule Assumptions

The ability to perform in accordance with this schedule for treatment of SR-W045 depends on, but is not limited to, the following:

“Treatment” is defined as treatment of the waste to meet LDR standards in effect as of September 30, 2003.

Receipt by DOE of adequate funding.

Authorization to ship to Nevada Test Site or other location out of South Carolina is obtained.

3.3 Mixed Low-Level Waste Streams for Which Further Characterization is Required

This section discusses the schedules for those specific waste streams that require further chemical or radiological characterization prior to the selection of a PO. The categories in this section are divided into waste streams to be further characterized and hazardous wastes awaiting radiological screening.

3.3.1 Waste Streams to be Further Characterized

Currently, there are no waste streams in this category.

3.3.2 Hazardous Waste Awaiting Radiological Screening

The following waste stream awaits radiological characterization/method development:

SR-W078, LDR Hazardous Waste Awaiting Radiological Screening (new waste stream identified January 22, 1996; processing schedule submitted to SCDHEC on January 9, 1997).

Estimated Schedule for Treatment of this Waste Stream

Complete radionuclide characterization for waste stream SR-W078
Submit information about wastes transferred from SR-W078 to an existing mixed waste stream:

Completed. Radiological characterization for this waste was completed July 8, 2002. (Required September 30, 2002)
Completed. Reports that identified waste quantities to be treated with an existing treatment path were submitted on a 6-month frequency to SCDHEC.

3.4 Mixed Low-Level Waste Streams Requiring Radionuclide Decay Prior to LDR Treatment

The preferred treatment option is treatment by aging in a regulated storage facility followed by combustion and/or appropriate mercury treatment.

SR-W036, Tritiated Oil with Mercury

SR-W090, Elemental Mercury – High Rad

Estimated Schedule for Treatment of this Waste Stream

The tritiated oil will be stored in a RCRA interim status, permitted, or accumulation area in compliance with S.C. 61-79.262.34. Based on a tritium half-life of 12 years and the present tritium contamination of up to 185 Ci/L, the projected worst-case radioactive decay time appropriate to eliminate release of excessive tritium during combustion

would be 2060. A location for combustion and/or mercury treatment will be selected at a later date. See Volume II, Section 3.4, for additional details about this waste stream and its proposed treatment.

3.5 Mixed Low-Level Waste Streams—Other Commitments

Aisle Spacing Requirements

Commitment to aisle spacing of Buildings 643-29E and 643-43E.

Completed. The storage configuration for Buildings 643-29E and 643-43E was revised to rows of two drums wide on April 30, 2002 (required date September 30, 2002).

CHAPTER 4. MIXED TRANSURANIC WASTE STREAMS

The current DOE strategy for management of mixed transuranic (MTRU) waste is to maintain the MTRU wastes in safe interim storage; to characterize, certify, process if necessary, and package the wastes to meet the Waste Acceptance Criteria (WAC) of WIPP; and to permanently dispose of applicable MTRU waste in WIPP. The Defense Authorization Bill for Federal FY 97, which contained amendments to the 1992 WIPP Land Withdrawal Act, was signed by the President on September 22, 1996, and the Secretary of Energy declared WIPP open and ready to receive waste in May 1998. The amendments also exempt DOE from the requirements to obtain a RCRA no-migration determination from EPA. EPA agrees that the no-migration determination is redundant to the more stringent radioactive waste disposal standard and that the exemption will not jeopardize the environment. WIPP has obtained a RCRA Part B Permit from the State of New Mexico to receive MTRU for disposal.

Site-specific information is included in the following section to outline activities being performed at SRS to maintain safe compliant storage, waste characterization activities, and other activities planned to support the ultimate goal of shipment to and disposal at WIPP.

The following project activity schedules are planned for the treatment of MTRU waste in accordance with Section 2.2 of this volume. Refer to Table 1.1, Chapter 1 of this volume for the user's guide to the waste streams. The user's guide identifies each waste stream, the PO, and the location where the waste stream is discussed in Volumes I and II of this STP. The sections of this chapter are divided into treatment categories, as discussed in the following sections.

4.1 Site MTRU Waste Management Approach

TRU waste is defined in DOE Order 435.1 as waste contaminated with alpha-emitting transuranic radionuclides (radionuclides with atomic numbers greater than 92) with half lives greater than 20 years in concentrations greater than 100 nCi/g of waste matrix. TRU waste at SRS that also contains hazardous constituents as defined in 40 CFR 261 and the South Carolina Hazardous Waste Management Regulations (SCHWMR) R.61-79.261 is managed in accordance with both DOE Orders and S.C. Hazardous Waste Management Regulations and is referred to as MTRU waste.

Although, all RCRA hazardous waste has been managed in accordance with RCRA requirements and the permit, historically hazardous waste storage capacity was not a concern. Emphasis was placed on shipping the waste to WIPP. However, as a result of the TRU Pads RCRA Permit Special Condition (VC.B.1.a), administrative storage capacity has gradually been reduced. To address this reduced capacity, Solid Waste Management enhanced inventory controls to more accurately track specific waste streams. As a result, the volume of SR-W027 shown in Volume II Chapter 11 has increased. This increased volume is not due to an increase in waste received or stored. But, rather it reflects enhanced hazardous waste inventory controls that have been implemented. Also, during waste preparation for WIPP shipments, waste volumes may be split between multiple containers, increasing inventory volume.

MTRU waste streams are generated primarily by Plutonium Separations Facilities and the Analytical Laboratories. Other past generators of significantly smaller volumes include Naval Fuels Facility, the Reactor Facility, the Fuel Fabrication Facility, the Radioactive Liquid Waste Tank Farms, and the Solid Waste Management Facility. In the 1970s, SRS received a large volume of MTRU waste from offsite generators, including the Los Alamos National Laboratory, Knolls Atomic Power Laboratory, and the DOE Mound Site. MTRU waste shipments have been received from the DOE Mound Site since September 2001 (see Vol. II, Sec. 4.2.2). DOE initially needed to dispose of approximately 37 m³ of TRU waste generated as part of the cleanup of the Battelle Columbus Laboratory West Jefferson site near Columbus, Ohio. Battelle Columbus TRU waste consists of CH and RH, based on the radiation level at the surface of the waste container. Some TRU waste is also mixed waste, having both radioactive and hazardous components. SRS shipped 16.89 m³ of Battelle Columbus TRU waste to WIPP during FY2011. MTRU waste generated at SRS is primarily job control waste, which includes combinations of the following: plastic, paper, rubber, glassware, metal items, lead-lined gloves, filters, used equipment, and other contaminated materials from routine processing.

Due to the variety of container types, MTRU waste is generally categorized by its container: drums, polyethylene boxes, concrete casks, large steel black boxes, and other odd-sized containers. The type container also dictates the storage configuration; for example, drums are either stored in culverts that are stored on uncovered pads that are exposed to the weather or stored directly on covered pads.

Seven waste streams are currently managed as MTRU waste.

Waste Stream No.	Description
SR-W006	CH Mixed TRU/Liquids
SR-W009	Silver-Coated Packing Material
SR-W025	Solvent/TRU Job Control Waste <100 nCi/g (Consolidated with SR-W091)
SR-W026	CH Mixed TRU/Thirds (Consolidated with SR-W027)
SR-W027	CH Mixed TRU
SR-W033	Thirds/TRU Job Control Waste <100 nCi/g
SR-W053	Rocky Flats Ash
SR-W089	MTRU Waste Received from Mound Site
SR-W092	MTRU Waste Received from Battelle Columbus Site

4.1.1 Onsite Treatment Via Treatability Variance Submittals

Estimated Schedule for Treatment of SR W009

Submittal of applicable permit application(s)	Completed. Treatability variance was submitted on September 18, 1997. This waste has recently been reclassified as TRU. The treatability variance will be left in place until such time as this waste stream can be assayed at Oak Ridge, TN, as CH TRU or Remote-handled (RH) TRU. The silver-coated packing material will require additional radiological characterization. The material will be repackaged after the assays are complete and prior to shipment to WIPP.
---	--

NOTE: It is not anticipated that additional treatment will be required. The schedule below is being retained until the assays at Oak Ridge are complete and the disposal is confirmed for WIPP.

Entering into contracts:	Initiate procurement within 3 months of approval of the treatability variance petition. Initiating procurement shall mean issuing a request for proposal based on the approved treatability variance.
Initiating construction:	Initiate construction within 12 months of approval of the treatability variance petition. Initiate construction shall mean initiating equipment and installing procured materials.
Conducting systems testing:	Initiate systems testing within 6 months of initiating construction. Initiate system testing shall mean beginning equipment checkout, developing procedures, and planning required self-assessments.
Commencing operations:	Commence operations within 6 months of initiating systems testing. Commence operations shall mean macroencapsulating mixed waste in accordance with the approved treatability variance.

Submitting waste processing schedule: Within 4 months after commencing operations, submit schedule for processing backlogged and currently generated mixed waste(s).

Waste streams SR-W025 and SR-W033 are categorized as <100 nCi/g but are managed as MTRU waste. These two waste streams potentially fit into one or more waste classifications. They will be further characterized, and the portion that is MTRU (>100 nCi/g) will be sent to WIPP. The remaining mixed low-level component may be used to blend high activity MTRU waste down to meet the transportation and packaging limits for transportation to WIPP for disposal. Estimates indicate that the largest fraction of these two streams will fall into the mixed LLW category.

TRU Pad Secondary Containment

The following commitments have been made regarding mixed TRU waste containers stored on interim status TRU pads:

1. Remove all mixed TRU waste from TRU pads 7 through 13 by September 30, 2008. **Complete**
2. Submit annual interim progress reports to SCDHEC beginning March 31, 2006, [complete] with another interim report due January 31, 2007 (**Complete**) and the final interim report issued January 31, 2008. **Complete**
3. Submit RCRA closure plan [complete] for TRU pads 7 through 13 by March 31, 2006. If needed, TRU Pad Permit modification adding TRU Pads 1 and 2 will be submitted by June 30, 2007. **Complete**
4. Dewater, repackage or move all rainwater infiltrated TRU black boxes and miscellaneous steel boxes to RCRA pads with secondary containment by September 30, 2006 [completed September 29, 2006]. **Complete**
5. Make decision to submit either a closure plan or permit modification for TRU pad 1 by September 30, 2006 [complete]. Commitment changed; see A below. **Complete**
 - A. Submit permit modification for TRU pads 1 and 2 by June 30, 2007. **Complete**
6. Commence closure of TRU pads 7 through 13 by March 31, 2009. **Complete** TRU pad 2 will be closed at a future date to be determined.
7. Complete the sampling and integrity evaluation of drums in culverts on TRU pad 1 by March 30, 2010. **Complete**
8. Submit a plan and schedule describing the strategy for bringing TRU pad 1 into regulatory compliance similar to the remaining TRU pads, or submit a closure plan for TRU pad 1 by June 30, 2011. **Complete**

Schedule Assumptions

The ability to perform in accordance with the estimated schedule depends on, but is not limited to, the following:

- The STP Cleanup Credits agreement is in effect
- Receipt by DOE of adequate funding specifically identified for this project to support the schedule
- Resolution of any technically related finding(s) that might result from an operational readiness self-assessment or the systems testing phase
- No changes in regulations, statutes, or the regulator's interpretations
- Disposition of TRU black boxes can be by dewatering, repackaging for shipment or relocation to RCRA permitted pad(s) with sufficient secondary containment
- Operation of WIPP until 2034 as described in the Carlsbad Field Office "National TRU Waste Management Plan" (Document DOE/MP-96-1204, Revision 3)
- Schedule can be extended where good cause exists, including but not limited to
 - circumstances unforeseen at the time the schedule was prepared that significantly affect the work required,
 - delays in review of permit application(s), permit(s), or delays in approval of any other documents or other items needed to satisfy the requirements outlined,
 - any other event or series of events including but not limited to the discovery of new technological information or technological barriers that significantly affects the work required, or

- a delay caused by insufficient funding where DOE, in a timely manner and in good faith, requested adequate funding in accordance with the Federal appropriations process, but Congress failed to appropriate such funding.
- Receipt of newly generated waste at the TRU pads is in the same proportions as historically received. (This includes the ratio of mixed to non-mixed TRU waste received, as well as the distribution between pad-stored and culvert-stored TRU waste drums. The storage configuration needed for each container of newly generated waste will impact the storage area remaining for drum storage on these pads).

CHAPTER 5. HIGH-LEVEL RADIOACTIVE WASTE

The following project activity schedules are planned for the treatment of HLW in accordance with Section 2.2 of this volume. Refer to Table 1.1, Chapter 1 of this volume for the User's Guide to the waste streams. The User's Guide identifies each waste stream, the preferred treatment option (PO), and the location where the waste stream is discussed in Volumes I and II of the STP.

High-Level Waste Treated Onsite in Existing Facilities

Currently, DWPF is the only facility at SRS that treats high-level waste.

Vitrification in the DWPF for the high level liquid waste portion and solidification in the Saltstone Facilities for the low level liquid waste portions, are the PO for certain mixed waste streams, including, but not limited to, the following:

SR-W016, 221-F Canyon High-Level Radioactive Liquid Waste / Low-Level Radioactive Liquid Waste

SR-W017, H Canyon High-Level Radioactive Liquid Waste / Low-Level Radioactive Liquid Waste

Estimated Schedule for this Onsite Facility

Submittal of all applicable permit applications:	Completed. The industrial wastewater treatment facility construction and operating permits for the Defense Waste Processing Facility (DWPF) have been received. DWPF also operates under the SRS Part 70 (Title V) Air Permit.
Entering into contracts:	Completed. Contracts were entered prior to approval of the STP on September 29, 1995.
Initiating construction:	Completed. DWPF construction was initiated in April 1983.
Conducting systems testing:	Completed. Systems testing was initiated in January 1993.
Commencing operations:	Completed. Operations commenced March 7, 1996 and remain ongoing.
Submit processing backlogged and currently generated mixed waste schedule:	Completed. The schedule was submitted May 21, 1996. Commitments in the schedule stated that DWPF would remain in a start-up mode through 1996. During that time operating conditions will be confirmed. Upon the beginning of full operations, DWPF will maintain canister production sufficient to meet the commitment for the removal of the backlogged and currently generated waste inventory by 2028.

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Appendix A – Current Fiscal Year Commitments for Federal Fiscal Year 2012

Appendix A is a summary of commitments compiled from Volume I for the current Federal fiscal year 2012, including the deliverable date to meet each commitment. The process used to prepare this appendix is found in Section 2, Chapter 2, of this volume.

Federal Fiscal Year Identified: 2012

No.	Commitment Schedule	Date
	None	

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Appendix B – Commitments for Upcoming Federal Fiscal Year +1 and +2

Appendix B is a summary list of commitments compiled from Volume I for the first and second years after the current Federal fiscal year, including the deliverable dates for each commitment. The process used to prepare this appendix is found in Section 2, Chapter 2, of this volume.

Federal Fiscal Year Identified: 2012 and 2013

No.	Commitment Schedule	Date
	None	

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Savannah River Site Approved Site Treatment Plan, 2011 Annual Update

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CHAPTER 1. INTRODUCTION

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CHAPTER 2. METHODOLOGY

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CHAPTER 3. MIXED LOW-LEVEL WASTE STREAMS

This chapter discusses the wastes, waste groups and treatment options for the mixed low-level waste (LLW) stream category. The wastes are categorized according to the proposed treatment. These proposed treatment options include the following:

- 3.1 Mixed LLW with Treatment Capacity
- 3.2 Mixed LLW Streams Requiring Technology Development
- 3.3 Mixed LLW Streams for Which Further Characterization is Required
- 3.4 Mixed LLW Streams Requiring Radionuclide Decay Prior to land disposal restriction (LDR) Treatment
- 3.5 Savannah River Site (SRS) Treatment Facilities that have Discontinued Operations

Refer to Table 1.1, Chapter 1, of Volume I of the Site Treatment Plan (STP) for the user's guide. The user's guide identifies each mixed waste stream, the preferred option (PO), and the section in which the waste stream is discussed in Volumes I and II of this STP.

3.1 *Mixed Low-Level Waste Streams with Treatment Capacity*

This section discusses the schedules and plans associated with treatment of SRS mixed waste with currently available treatment capacity. This section of the chapter is divided into treatment categories as follows:

- 3.1.1 Onsite Treatment
- 3.1.2 Offsite Treatment
- 3.1.3 Preferred Treatment to be Determined

3.1.1 Onsite Treatment

Several onsite treatment facilities are available at SRS for treating mixed LLW, including the F- and H-Area Effluent Treatment Project (ETP) and the Saltstone facility. This section addresses treatability variance petition submittals, recycling, and miscellaneous onsite treatments not otherwise mentioned.

3.1.1.1 F-Area and H-Area Effluent Treatment Project

As waste characterizations are reviewed, aqueous characteristic wastes such as those in SR-W041 and SR W077 may be treated at the ETP if appropriate and approved. (See Section 9.1.1, which has been archived, for more information.)

SR-W077, Aqueous Characteristic Wastewater

Certain volumes of this waste stream consist of certain aqueous sample residues and unused samples, particularly from groundwater monitoring wells that have been returned from onsite or offsite laboratories. Laboratory waste in this stream also may include characteristically hazardous aqueous laboratory standards from onsite laboratories. It also includes purge water from wells at the Mixed Waste Management Facility. A variety of other wastewaters from various facilities contribute to this stream, e.g., wastewater collected from Consolidated Incineration Facility (CIF) sumps and the H-Canyon LLW stream. Additional waste has been added to the original waste stream, which requires treatment in the future.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Aqueous wastewater

Waste Code

- D002A (corrosive wastewater)
- D005 (Barium (Ba))

- D006A (Toxicity Characteristic Leaching Procedure (TCLP), Cadmium (Cd))
- D007 (Chromium (Cr))
- D008A (TCLP Lead (Pb))
- D009A (TCLP Mercury (Hg))
- D010 (Selenium (Se))
- D011 (TCLP Silver (Ag))
- D018 (Benzene (B))
- D038 (Pyridine)
- D039 (Tetrachloroethylene (PCE))
- D040 (Trichloroethylene (TCE))
- F006 (wastewater treatment sludges from electroplating operations)

Land Disposal Restriction Treatment Standard

- D002A = DEACT
- D005 = concentration-based standard = 1.2 mg/L
- D006A = concentration-based standard = 0.69 mg/L
- D007 = concentration-based standard = 2.77 mg/L
- D008 = concentration-based standard = 0.69 mg/L
- D009A = concentration-based standard = 0.15 mg/L
- D010 = concentration-based standard = 0.82 mg/L
- D011 = concentration-based standard = 0.43 mg/L
- D018 = concentration-based standard = 0.14 mg/L
- D038 = concentration-based standard = 0.14 mg/L
- D039 = concentration-based standard = 0.056 mg/L
- D040 = concentration-based standard = 0.054 mg/L
- F006 = concentration-based standard = 0.69 – 3.98 mg/L, TCLP

D002A and D005 through D011 wastewaters must also meet Universal Treatment Standards (UTS) for underlying hazardous constituents (UHCs) unless they are rendered non-hazardous and subsequently managed in a Clean Water Act (CWA) treatment facility. D038, D039, and D040 wastewaters must also meet UTS for UHCs unless they are rendered non-hazardous and subsequently injected in a Class I Safe Drinking Water Act (SDWA) well.

Waste Characterization

- Process knowledge and sample results

Radiological Characterization

- Alpha and beta/gamma emitters are present

3.1.1.2 Onsite Treatment Via Macroencapsulation

SR-W091, Contaminated Debris (High Rad)

This new stream was declared in August 2004. SRS submitted a temporary authorization (TA) for macroencapsulation in E Area followed by a Part B permit modification for macroencapsulation as the treatment. These containers will be macroencapsulated in a stainless steel container and seal welded for disposal at Nevada Test Site (NTS).

This waste stream consists of greater than Class A debris (metal, floor tiles, fluorescent lamps, instruments, and other equipment, including debris generated from operations at CIF and machinery used in the remediation of various contamination sites that could not be decontaminated) contaminated with TCLP metals and radionuclides. (NOTE: this is a different stream from SR-W015, Mercury-/Tritium-Contaminated Equipment). This waste requires a permitted Treatment, Storage, and Disposal (TSD) for treatment since it has been in permitted storage. This waste stream also includes tools and other non-incinerable items found in waste stream SR-W055, Job

Control Waste Containing Solvent-Contaminated Wipes and personal protective equipment (PPE); SR-W025, Solvent/TRU Job Control Waste < 100 nCi/g; SR-W042, Paints and Thinners; and other waste streams shredded in preparation for treatment by combustion. It also includes job control waste from other facilities as well as job control waste that will be macroencapsulated onsite and sent to NTS.

In addition to the CIF debris, this waste stream consists of filters, job control waste from the segregation and decontamination of lead in Building 105-C, and soil associated with other equipment or debris from the M-Area Vendor Treatment Facility, the tank farms, and other site locations. Radioactive Hg/nickel (Ni)-Cad batteries have recently been approved by U.S. Environmental Protection Agency (EPA) for macroencapsulation and are, therefore, included in this waste stream.

Volume

- Volume data on this waste stream can be found in Chapter 11.

Waste Stream Composition

- Inorganic debris

Waste Code

- D004 (TCLP As)
- D005 (TCLP Ba)
- D006A (TCLP Cd)
- D007 (TCLP Chromium (Cr))
- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D010 (TCLP Selenium (Se))
- D011 (TCLP Ag)
- D035 (Methyl ethyl ketone)
- D039 (Tetrachloroethylene)
- F001 (Unspecified solvents)
- F002 (Unspecified solvents)
- F003X (Unspecified solvents)
- F004X (Unspecified solvents)
- F005X (Unspecified solvents)
- F006 (Metal plating waste without cyanide)
- P048 (2,4-Dinitrophenol)
- P113 (Thallic Oxide)
- U002 (Acetone)
- U003 (Acetonitrile)
- U019 (Benzene)
- U037 (Chlorobenzene)
- U080 (Methylene Chloride)
- U123 (Formic Acid)
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- U165 (Naphthalene)
- U188 (Phenol)
- U209 (1,1,2,2-Tetrachloroethane)
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- U220 (Toluene)
- U226 (1,1,1-Trichloroethane)

- U228 (Trichloroethylene)
- U239 (Xylenes)
- Non-wastewater

Specific waste codes will vary depending upon where the waste was generated. Wastes from CIF contain all of the waste codes that are fed to CIF. The F-listed solvents listed reflect the non-incinerable items found in waste streams SR-W025 and SR-W055. Items from SR-W025 and SR-W055 may contain other P- and U-listed codes.

Land Disposal Restriction Treatment Standard

- D004 = concentration-based standard = 5.0 mg/L, TCLP
- D005 = concentration-based standard = 21 mg/L, TCLP
- D006 = concentration-based standard = 0.11 mg/L, TCLP
- D007 = concentration-based standard = 0.60 mg/L, TCLP
- D008 = concentration-based standard = 0.75 mg/L, TCLP
- D009 = concentration-based standard = 0.025 mg/L, TCLP
- D010 = concentration-based standard = 5.7 mg/L, TCLP
- D011 = concentration-based standard = 0.14 mg/L, TCLP
- D035 = concentration-based standard = 36 mg/kg
- D039 = concentration-based standard = 0.14 mg/L, TCLP
- F001 = concentration-based standard = 6-30 mg/kg
- F002 = concentration-based standard = 6-30 mg/kg
- F003 = concentration-based standard = 2.6 - 60 mg/kg
- F004 = concentration-based standard = 6 - 160 mg/kg
- F005 = concentration-based standard = 10 - 170 mg/kg
- F006 = concentration-based standard = 0.19 – 5.0 mg/L, TCLP
- P048 = concentration-based standard = 160 mg/kg
- P113 = specified technology = RTHRM; or STABL
- U002 = concentration-based standard = 160 mg/kg
- U003 = specified technology = CMBST
- U019 = concentration-based standard = 10 mg/kg
- U037 = concentration-based standard = 6 mg/kg
- U080 = concentration-based standard = 30 mg/kg
- U123 = specified technology = CMBST
- U127 = concentration-based standard = 10 mg/kg
- U131 = concentration-based standard = 30 mg/kg
- U151 = concentration-based standard = 0.025 mg/L, TCLP
- U159 = concentration-based standard = 36 mg/kg
- U165 = concentration-based standard = 5.6 mg/kg
- U188 = concentration-based standard = 6.2 mg/kg
- U209 = concentration-based standard = 6.0 mg/kg
- U210 = concentration-based standard = 6 mg/kg
- U211 = concentration-based standard = 6 mg/kg
- U220 = concentration-based standard = 10 mg/kg
- U226 = concentration-based standard = 6 mg/kg
- U228 = concentration-based standard = 6.0 mg/kg
- U239 = concentration-based standard = 30 mg/kg
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Waste debris from CIF will have treatment standards that are reflected in the waste fed to CIF. Specific information on treatment standards can be acquired by looking at specific wastes identified in this volume of the STP.

Waste Characterization

- Process knowledge is used to characterize the waste stream.
- Confidence level is high based on knowing process history of the waste.

Radiological Characterization

- Radioactivity will vary depending on the generation source and location.
- Waste is contact handled (CH).
- Mixed LLW

3.1.1.3 Onsite Treatment Via Treatability Variance Submittals

Submittal of a treatability variance for macroencapsulation is the PO for certain mixed waste streams including those described below.

There are currently no waste streams for this treatment standard.

3.1.2 Offsite Treatment

For those waste streams that cannot be accommodated by SRS treatment facilities, various treatment technologies available at offsite facilities have been determined to be the PO. This section discusses the treatment options that are available for offsite treatment. These include offsite vendor treatment and offsite treatment at other DOE facilities.

3.1.2.1 DOE Thermal Treatment

The POs for the polychlorinated biphenyl (PCB) Mixed Waste Group are combustion at the East Tennessee Technology Park (ETTP) Toxic Substances Control Act (TSCA) Incinerator or vendor alternate debris technology treatment.

General Information

Currently, the sole representative of this waste group is:

SR-W079, Polychlorinated Biphenyl (PCB) Mixed Waste

Background Information

SR-W079, Polychlorinated Biphenyl (PCB) Mixed Waste

This waste stream has been reserved for all PCB-contaminated mixed waste for which treatment to destroy the PCBs is required under TSCA or debris that can be disposed under the PCB “mega rule” after Resource Conservation and Recovery Act (RCRA) contaminants are treated to meet LDRs. This waste stream includes waste from laboratory analyses, paint chips, debris from the demolition of excess site facilities, and PCB spill cleanup waste.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- PCB-contaminated, organic liquid, miscellaneous solids

Waste Code

- D001B (Ignitable, high total organic compound (TOC) non-wastewater)
- D002B (corrosive, non-wastewater)
- D004 (TCLP As)
- D005 (TCLP Ba)
- D006A (TCLP Cd)
- D007 (TCLP Cr)
- D008A (TCLP Pb)

- D009A (TCLP Hg)
- D010 (TCLP Se)
- D035 (Methyl ethyl ketone).
- D040 (Trichloroethylene).
- F001 and F002 (Spent halogenated solvents)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- D001 = specified technology = CMBST
- D002 = specified technology = DEACT
- D004 = concentration-based standard = 5.0 mg/L, TCLP
- D005 = concentration-based standard = 21 mg/L, TCLP
- D006 = concentration-based standard = 0.11 mg/L, TCLP
- D007 = concentration-based standard = 0.60 mg/L, TCLP
- D008 = concentration-based standard = 0.75 mg/L, TCLP
- D009 = concentration-based standard = 0.025 mg/L, TCLP
- D010 = concentration-based standard = 5.7 mg/L, TCLP
- D035 = concentration-based standard = 36 mg/kg.
- D040 = concentration-based standard = 6.0 mg/kg.
- F001 and F002 = concentration-based standard = 6-30 mg/kg
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Waste Characterization

- Sampling and analysis are used to characterize this waste stream.
- Confidence level is high because sampling and analysis has been performed.

Radiological Characterization

- Beta/gamma emitters are present (Cs-137, Sr-90, and others).
- Alpha emitters are present (U-235, U-238, Pu-239, Pu-240, and others).
- CH
- Mixed LLW

3.1.2.2 Commercial Vendor Debris Treatment

Alternate debris technology treatment, or macroencapsulation, shredding followed by stabilization at an offsite vendor's facility are the POs for certain mixed waste streams, including the following:

SR-W062, Low-Level Contaminated Debris

General Information

SR-W062, Low-Level Contaminated Debris

This waste stream consists of debris (metal, floor tiles, fluorescent lamps, instruments, and other equipment including debris generated from operations at CIF and machinery used in the remediation of various contamination sites that could not be decontaminated) contaminated with TCLP metals and radionuclides. (NOTE: this is a different stream from SR-W015, Mercury/Tritium Contaminated Equipment). This waste requires a permitted TSD for treatment since it has been in permitted storage.

This waste stream also includes tools and other non-incinerable items found in waste stream SR-W055, Job Control Waste Containing Solvent-Contaminated Wipes and PPE, SR-W025, Solvent/TRU Job Control Waste < 100 nCi/g; SR-W042, Paints and Thinners; and other waste streams shredded in preparation for treatment by combustion.

In addition to the CIF debris, this waste stream also consists of filters, job control waste from the segregation and decontamination of lead in Building 105-C, and soil associated with other equipment or debris from the M-Area

Vendor Treatment Facility, the tank farms, and other site locations. Radioactive Hg/Ni-Cad batteries have recently been approved by EPA for macroencapsulation and are, therefore, included in this waste stream.

Volume

- Volume data on this waste stream can be found in Chapter 11.

Waste Stream Composition

- Inorganic debris

Waste Code

- D004 (TCLP As)
- D005 (TCLP Ba)
- D006A (TCLP Cd)
- D007 (TCLP Cr)
- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D010 (TCLP Se)
- D011 (TCLP Ag)
- D035 (Methyl ethyl ketone)
- D039 (Tetrachloroethylene)
- F001 (Unspecified solvents)
- F002 (Unspecified solvents)
- F003X (Unspecified solvents)
- F004X (Unspecified solvents)
- F005X (Unspecified solvents)
- F006 (Metal plating waste without cyanide)
- P048 (2,4-Dinitrophenol)
- P113 (Thallic Oxide)
- U002 (Acetone)
- U003 (Acetonitrile)
- U019 (Benzene)
- U037 (Chlorobenzene)
- U080 (Methylene Chloride)
- U123 (Formic Acid)
- U127 (Hexachlorobenzene)
- U131 (Hexachloroethane)
- U151 (TCLP Hg)
- U159 (Methyl Ethyl Ketone)
- U165 (Naphthalene)
- U188 (Phenol)
- U209 (1,1,2,2-Tetrachloroethane)
- U210 (Tetrachloroethylene)
- U211 (Carbon Tetrachloride)
- U220 (Toluene)
- U226 (1,1,1-Trichloroethane)
- U228 (Trichloroethylene)
- U239 (Xylenes)
- Non-wastewater

Specific waste codes will vary depending upon where the waste was generated. Wastes from CIF contain all of the waste codes that are fed to CIF. The F-listed solvents listed reflect the inclusion of non-incinerable items found in waste streams SR-W025 and SR-W055. Items from SR-W025 and SR-W055 may contain other P- and U-listed codes.

Land Disposal Restriction Treatment Standard

- D004 = concentration-based standard = 5.0 mg/L, TCLP
- D005 = concentration-based standard = 21 mg/L, TCLP
- D006 = concentration-based standard = 0.11 mg/L, TCLP
- D007 = concentration-based standard = 0.60 mg/L, TCLP
- D008 = concentration-based standard = 0.75 mg/L, TCLP
- D009 = concentration-based standard = 0.025 mg/L, TCLP
- D010 = concentration-based standard = 5.7 mg/L, TCLP
- D011 = concentration-based standard = 0.14 mg/L, TCLP
- D035 = concentration-based standard = 36 mg/kg
- D039 = concentration-based standard = 0.14 mg/L, TCLP
- F001 = concentration-based standard = 6-30 mg/kg
- F002 = concentration-based standard = 6-30 mg/kg
- F003 = concentration-based standard = 2.6 - 60 mg/kg
- F004 = concentration-based standard = 6 - 160 mg/kg
- F005 = concentration-based standard = 10 - 170 mg/kg
- F006 = concentration-based standard = 0.19 – 5.0 mg/L, TCLP
- P048 = concentration-based standard = 160 mg/kg
- P113 = specified technology = RTHRM; or STABL
- U002 = concentration-based standard = 160 mg/kg
- U003 = specified technology = CMBST
- U019 = concentration-based standard = 10 mg/kg
- U037 = concentration-based standard = 6 mg/kg
- U080 = concentration-based standard = 30 mg/kg
- U123 = specified technology = CMBST
- U127 = concentration-based standard = 10 mg/kg
- U131 = concentration-based standard = 30 mg/kg
- U151 = concentration-based standard = 0.025 mg/L, TCLP
- U159 = concentration-based standard = 36 mg/kg
- U165 = concentration-based standard = 5.6 mg/kg
- U188 = concentration-based standard = 6.2 mg/kg
- U209 = concentration-based standard = 6.0 mg/kg
- U210 = concentration-based standard = 6 mg/kg
- U211 = concentration-based standard = 6 mg/kg
- U220 = concentration-based standard = 10 mg/kg
- U226 = concentration-based standard = 6 mg/kg
- U228 = concentration-based standard = 6.0 mg/kg
- U239 = concentration-based standard = 30 mg/kg
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Waste debris from CIF will have treatment standards that are reflected in the waste fed to CIF. Specific information on treatment standards can be acquired by looking at specific wastes in this volume of the STP.

Waste Characterization

- Process knowledge is used to characterize the waste stream.
- Confidence level is high based on knowing process history of the waste.

Radiological Characterization

- Radioactivity will vary depending on the generation source and location.
- Waste is CH.
- Mixed LLW

3.1.2.3 Commercial Vendor Lead Treatment

Lead Macroencapsulation at an offsite vendor's facility is the PO for some of the commercial vendors or is readily handled by the commercial vendor under special procedures.

SR-W069, Low-Level Waste (LLW) Lead-to be Macroencapsulated Offsite

This waste stream consists of LLW lead and lead compounds that are inseparably mixed with non-lead components. Examples of this waste stream are lead-lined gloves, aprons and equipment containing lead solder, and radioactive lead acid batteries. This stream also includes lead shielding, bricks, etc., that cannot be decontaminated.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Elemental lead
- Non-elemental lead

Waste Code

- D002 (corrosive)
- D004 (TCLP As)
- D006 (TCLP Cd)
- D008A (TCLP Pb)
- D008B (lead acid batteries and radioactive lead solids)
- D008C (elemental Pb)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- D008 = concentration-based technology = 0.75 mg/L TCLP; or specified technology = MACRO for radioactive elemental lead
- D008 specified technology

Waste Characterization

- Process knowledge is used to characterize the waste stream.
- Confidence level is high based on the fact that waste is easily identified as containing lead.

Radiological Characterization

- Beta/gamma emitters (Cs-137 and Sr-90) are present.
- Alpha emitters (Pu-238, Pu-239, and U-235) are present.
- Waste is CH.
- Mixed LLW

3.1.2.4 Commercial Vendor Mercury Treatment

The PO is direct amalgamation (AMLGM) or stabilization by a commercial vendor, dependent upon vendor states' approval of direct AMALGM for the waste. The following waste streams are in this category:

SR-W014, Elemental (Liquid) Mercury – Sitewide

SR-W060, Tritiated Water with Mercury

SR-W068, Elemental (Liquid) Mercury – Sitewide

SR-W086, Characteristically Hazardous Non-Incinerable Solids

General Information

SR-W014, Elemental (Liquid) Mercury – Sitewide

This waste stream includes elemental mercury generated at different SRS facilities, primarily at the high level waste (HLW) Tank Farms, Defense Waste Processing Facility (DWPF) and Defense Programs. At the HLW Tank Farms and DWPF, elemental mercury is recovered during the evaporation and vitrification of HLW. Currently, H-Canyon Dissolving Operations will re-use a portion of the mercury generated by the HLW Tank Farms and DWPF. The re-use will continue until the dissolving operations cease. This waste stream also includes elemental mercury used as a pumping fluid in diffusion pumps for the transfer of tritium gas. The mercury waste is generated from pump maintenance or pump failure due to mercury oxide fouling. This waste stream also includes broken thermometers, unbroken thermometers, and mercury spill cleanup materials generated sitewide.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Elemental mercury

Waste Code

- D009D (elemental mercury)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- D009 = specified technology = AMLGM

Waste Characterization

- Process knowledge is used to characterize the waste stream.
- Confidence level is high based on the waste composition.

Radiological Characterization

- Radioactivity will vary depending on the generation source and location.
- Waste is CH and meets Nuclear Regulatory Committee (NRC) Class A limits.
- Mixed LLW

SR-W060, Tritiated Water with Mercury

This waste is highly tritiated heavy water with a small amount of mercury that has been adsorbed on silica gel. The waste was created by a spill incident resulting from a weld failure in a retired thermal diffusion column. The spill consisted of 17 liters of highly tritiated water and 3 or 4 milliliters of elemental mercury. The spill was absorbed with 50 kilograms of silica gel. The waste is contained in a welded stainless steel container. There are no free liquids in this container. The waste was sent to Materials and Energy Control on September 2, 2009. The containers will be opened and the absorbed material will be treated to meet LDR Standards.

Volume

- Data on the volume of this waste stream can be found in Chapter 11.

Waste Stream Composition

- Inorganic particulate

Waste Code

- D009A (TCLP Hg)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- D009 = concentration-based standard = 0.025 mg/L TCLP
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Waste Characterization

- Process knowledge is used to characterize the waste stream.
- Confidence level is medium.

Radiological Characterization

- 7,800 Ci of tritium

SR-W068, Elemental (Liquid) Mercury - Sitewide

This waste stream is elemental mercury generated at different SRS facilities, primarily at DWPF and the HLW Tank Farms. At DWPF, elemental mercury is recovered during the vitrification of HLW. Elemental mercury is recovered during the evaporation of HLW in the HLW Tank Farms. Currently, H-Canyon Dissolving Operations will re-use a portion of the mercury generated by DWPF and the HLW Tank Farms. The re-use will continue until the dissolving operations cease. Some portion of the mercury generated may be managed as waste stream SR-W068 and will be consolidated with SR-W014.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Elemental mercury

Waste Code

- D009D (elemental mercury)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- D009D = specified technology = AMLGM

Waste Characterization

- Process knowledge is used to characterize the waste stream.
- Confidence level is high based on the waste composition.

Radiological Characterization

- Radioactivity will vary depending on the generation source and location.
- Waste is CH.
- Mixed LLW

SR-W086, Characteristically Hazardous Non-Incinerable Solids

This waste stream comprises filters, swipes and other cleanup material that contains mercury concentrations greater than 260 mg/kg. The waste generated from mercury spill cleanup, broken and unbroken thermometers, and filtering activities. This waste stream also includes batteries, floor tiles, and fluorescent lamps.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Heterogeneous organic and inorganic debris

Waste Code

- D007 TCLP (chromium)
- D009C High mercury (inorganic)
- D009D Elemental mercury
- D008 TCLP (lead)

Land Disposal Restriction Treatment Standard

- Retorting or Roasting, (RMERC)
- AMLGM

Waste Characterization

- Sampling and analysis were used to characterize this waste stream.
- Confidence is high.

Radiological Characterization

- Average total activity is 50 nCi/g with depleted uranium.
- Waste is CH.
- Mixed LLW

3.1.2.5 Commercial Vendor Solids Treatment

The PO can include several treatment steps. Wastes that contain organic material in excess of the LDR treatment standard are initially treated to separate the organic portion of the contaminants using solvent extraction or thermal separation. The desorbed chemical constituents are then treated via direct chemical oxidation or combustion. The waste material remaining after organics or non-organic waste material is removed is then either directly stabilized, shredded and stabilized, macroencapsulated, or subjected to alternative debris treatment technologies. No stabilization of organics is performed, and no impermissible dilution occurs. Wastes that do not contain significant organics are either directly stabilized, shredded and stabilized, macroencapsulated, or subjected to alternative debris treatment technologies as appropriate under RCRA regulations.

The following waste streams are included in this category:

SR-W048, Soils from Spill Remediation (stabilization thermal treatment)

SR-W073, Cadmium-containing Raschig Rings (shredded and stabilized)

SR-W082, Radioactive CMP Soils (stabilization thermal treatment)

SR-W088, Sludges and Non-Debris Solids (thermal treatment, stabilization)

SR-W048, Soils from Spill Remediation

This waste consists of soils, sand, and associated debris (rocks, wood, etc.) resulting from cleanup activities of spills surrounding operations. This waste stream does not include any soils to be addressed in the Environmental Restoration program. The original value of waste in stream SR-W048 was treated in M-Area Vitrification Facility. Additional waste has now been added to SR-W048 with a new PO. Waste codes F002, F003 and F005 were added as a result of a Pad 1 Mound Drum. The cleaned up soil is carrying these codes.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Uncategorized soils

Waste Code

- D002 (corrosive)
- D006 (TCLP Cd)
- D007 (TCLP Cr)
- D008 (TCLP Pb)
- D009A (TCLP Hg)
- F001 (spent halogenated degreasing solvents)
- F002, F003 and F005 (spent and non-spent halogenated solvents)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- D002 = DEACT
- D006 = concentration-based standard = 0.11 mg/L, TCLP
- D007 = concentration-based standard = 0.60 mg/L, TCLP
- D008 = concentration-based standard = 0.75 mg/L, TCLP
- D009 = concentration-based standard = 0.02 mg/L, TCLP
- F001 = concentration-based standard = 6-30 mg/kg
- F002 = concentration-based standard = 6.0 mg/kg Total (tetrachloroethylene); 30 mg/kg total (methylene chloride)
- F003 = concentration-based standard = 0.75 mg/L, TCLP - 160 mg/kg
- F005 = concentration-based standard = 4.8 mg/L, TCLP-170 mg/kg except 2 Ethoxyethanol and 2-Nitropropane = CMBST

Waste Characterization

- Process knowledge is used to characterize the waste stream.
- Confidence level is high based on process knowledge of what was spilled or located at a particular site.

Radiological Characterization

- Beta/gamma and alpha emitters are present.
- Waste is CH.
- Mixed LLW.

SR-W073, Cadmium-Containing Raschig Rings

This waste stream is composed of approximately 60% rubbery-plastic material, 20% lead, and 20% cadmium (by volume). These Raschig Rings were used as a criticality prevention measure in certain sumps in the Separations H-Area facility. Waste size is less than the 60 mm minimum particle standard for debris.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Other organic particulates

Waste Codes

- D006A (TCLP Cd)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- D006 = concentration-based standard = 0.11 mg/L TCLP
- D008 = concentration-based standard = 0.75 mg/L TCLP. (UTS)

Waste Characterization

- TCLP tests were performed to verify hazardous characteristic.

Radiological Characterization

- Radioactive contamination for alpha and beta/gamma was detected in analysis.
- Material was generated in a contamination area.

SR-W082, Radioactive Chemicals, Metals, and Pesticides (CMP) Soils

This waste stream is composed of soil and debris containing spent solvents, metal contaminants, and tetrachloroethylene removed from the organic and metal portions of the CMP disposal pits. This soil was excavated during a RCRA closure of the site.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Codes

- D004 (TCLP As)
- D006 (TCLP Cd)
- D007 (TCLP Cr)
- D008A (TCLP Pb)
- D010 (TCLP Se)
- D039 (TCLP tetrachloroethylene)
- F001 (trichloroethylene, methylene chloride)
- F002 (trichloroethylene, methylene chloride)
- U210 (tetrachloroethylene)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- D004 = concentration-based standard = 5.0 mg/1 TCLP
- D006 = concentration-based standard = 0.11 mg/1 TCLP
- D007 = concentration-based standard = 0.60 mg/1 TCLP
- D008 = concentration-based standard = 0.75 mg/1 TCLP
- D010 = concentration-based standard = 5.7 mg/1 TCLP
- D039 = concentration-based standard = 6.0 mg/1 Total
- F001 = concentration-based standard = 6.0 mg/kg Total (tetrachloroethylene); 30 mg/kg total (methylene chloride)
- F002 = concentration-based standard = 6.0 mg/kg Total (tetrachloroethylene); 30 mg/kg total (methylene chloride)
- U210 = concentration-based standard = 6.0 mg/kg Total
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Waste Characterization

- Process knowledge

Radiological Characterization

- Tritium is the only isotope known to be present.
- Waste is CH.

SR-W088, Sludges and Non-Debris Solids

This waste stream consists primarily of dry solid material such as scabbled concrete, paint chips and crushed lamps. The scabbled concrete is generated from the demolition of SRS facilities performed by Site Decommissioning and Deactivation (D&D). Paint chips and spent contaminated lamps are generated by sitewide maintenance activities. These waste forms are primarily hazardous for metals. This stream also includes halogenated or non-halogenated sludges that require stabilization.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Codes

- D004 (TCLP As)
- D005 (TCLP Ba)
- D006A (TCLP Cd)
- D007 (TCLP Cr)
- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D010 (TCLP Se)
- D011 (TCLP Ag)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- D004 = concentration-based standard = 5.0 mg/L, TCLP
- D005 = concentration-based standard = 21 mg/L, TCLP
- D006 = concentration-based standard = 0.11 mg/L, TCLP
- D007 = concentration-based standard = 0.60 mg/L, TCLP
- D008 = concentration-based standard = 0.75 mg/L, TCLP
- D009 = concentration-based standard = 0.025 mg/L, TCLP
- D010 = concentration-based standard = 5.7 mg/L, TCLP
- D011 = concentration-based standard = 0.14 mg/L, TCLP

Waste Characterization

- Process knowledge and sampling and analysis have been used to characterize these waste streams.

Radiological Characterization

- Alpha and beta/gamma emitters are present.
- Waste is CH.

3.1.2.6 Commercial Vendor “Non-PUREX” Treatment

The PO can include several treatment steps. Wastes that contain organic material in excess of the LDR treatment standard are initially treated to separate the organic portion of the contaminants using solvent extraction or thermal separation. The desorbed chemical constituents are then treated via direct chemical oxidation or thermal treatment. The waste material remaining after organics are removed is then either directly stabilized, shredded and stabilized, macroencapsulated, or subjected to alternative debris treatment technologies. No stabilization of organics is performed, and no impermissible dilution occurs.

The following waste streams are included in this category:

SR-W001, Rad-Contaminated Solvents (thermal treatment)

SR-W003, Solvent-Contaminated Debris (LLW) (macroencapsulation or stabilization) (Consolidated with SR-W062)

SR-W012, Toxic Characteristic Solids (macroencapsulation or stabilization) (Consolidated with SR-W062 and SR-W088)

SR-W018, Listed Incinerable Solids (macroencapsulation or stabilization)

SR-W035, Mixed Waste Oil-Sitewide (thermal treatment [aqueous portion stabilized]) (Consolidated with SR-W001)

SR-W042, Paints and Thinners (thermal treatment or stabilization) (Consolidated with SR-W001)

SR-W051, Spent Filter Cartridges and Carbon Filter Media (macroencapsulation or stabilization) (Consolidated with SR-W062)

SR-W055, Job Control Waste Containing Solvent Contaminated Wipes (macroencapsulation or stabilization)

SR-W070, Mixed Waste from Laboratory Samples (thermal treatment or stabilization) (Consolidated with SR-W001, SR-W071 or SR-W077)

SR-W071, Wastewater Suitable for Thermal Treatment or Stabilization (Broad Spectrum)

SR-W080, Charleston Naval Shipyard Waste (CN-W001, CN-W004)

SR-W081, Reactive/Ignitable Waste*

SR-W087, Bettis Atomic Power Laboratory Contaminated Oil, (BT-W035 part of BT-W003)

*SR-W081 has undergone deactivation at generator facility prior to final treatment by commercial vendor.

SR-W001, Rad-Contaminated Solvents:

This waste stream is radioactively contaminated solvent and solvent mixtures such as solvents used for cleaning equipment in the Separations or Reactors Areas, degreasing solvents for depleted uranium fines used to assure unhindered adsorption of water in the tritium process, used or unused organic reagents and solutions used in bioassay and other laboratory analyses, and catalyst material for an incinerator that is no longer operational. The non-halogenated solvents in storage are wastes that used carbon (C-14) and tritium (H3) labeled materials as tracers, or mixtures of waste scintillation counter calibration standards. The halogenated solvents are degreasing solvents contaminated with tritium and uranium. This waste stream is a consolidation of SR-W001, Rad-Contaminated Solvents; SR-W002, Rad-Contaminated Chlorofluorocarbons; SR-W010, Scintillation Solution; SR-W030, Spent Methanol Solution; and SR-W059, Tetrabutyl Titanate. Added to the waste stream will be solvent waste generated from CIF operations. This waste stream also includes liquids formerly in waste stream SR-W078, Hazardous Waste Awaiting Radiological Screening (stream now closed), which the initial results of radiological analysis have shown to be mixed waste, or are indeterminate.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Organic liquid

Waste Code

- D001A (ignitable high TOC)
- D002 (corrosive, non-wastewater)
- D006A (TCLP Cd)
- D007 (TCLP Cr)
- D008A (TCLP Pb)
- D009 (TCLP Hg)
- D010 (TCLP Se)
- D011 (TCLP Ag)
- D018 (Benzene)
- D019 (Carbon tetrachloride)

- D022 (Chloroform)
- F001, F002, F003, F005A (halogenated and nonhalogenated spent solvents)
- F006 (wastewater treatment sludges from electroplating operations)
- U002 (Acetone)
- U003 (Acetonitrile)
- U019 (Benzene)
- U037 (Chlorobenzene)
- U045 (Methane, Chloro-(I,T) methyl chloride)
- U080 (Methylene chloride)
- U108 (1,4-Dioxane)
- U123 (Formic acid)
- U127 (Hexachlorobenzene)
- U131 (Hexachloroethane)
- U159 (Methyl ethyl ketone)
- U165 (Naphthalene)
- U188 (Phenol)
- U210 (Tetrachloroethylene)
- U211 (Carbon tetrachloride)
- U220 (Toluene)
- U226 (1,1,1-Trichloroethane)
- U228 (Trichloroethylene)
- U239 (Xylene)
- Non-wastewater

Since this waste stream will include wastes generated by previous CIF operations, additional waste codes may apply to this stream. Waste codes will depend on the specific generation episode at CIF. Potentially, any of the many waste codes included in the CIF RCRA Part B permit could apply. (Reference 1988 CIF Part B Permit Application).

Land Disposal Restriction Treatment Standard

- D001 = specified technology = RORGS or CMBST
- D002 = specified technology = DEACT
- D006 = concentration-based standard = 0.11 mg/L TCLP
- D007 = concentration-based standard = 0.60 mg/L TCLP
- D008 = concentration-based standard = 0.75 mg/L TCLP
- D009 = concentration-based standard = 0.025 mg/L TCLP
- D010 = concentration-based standard = 5.7 mg/L TCLP
- D011 = concentration-based standard = 0.14 mg/L TCLP
- D018 = concentration-based standard = 10 mg/kg, UTS = 10 mg/kg
- D019 and D022 = concentration-based standard = 6.0 mg/kg, UTS = 6.0 mg/kg
- F001 and F002 = concentration-based standard = 6.0-30 mg/kg
- F003 = concentration-based standard = 0.75 mg/L, TCLP - 160 mg/kg
- F005 = concentration-based standard = 4.8 mg/L, TCLP-170 mg/kg except 2 Ethoxyethanol and 2-Nitropropane = CMBST
- F006 = concentration-based standard = 0.11-11.0 mg/L TCLP
- U002 = concentration-based standard = 160 mg/kg
- U003 = concentration-based standard = 38 mg/kg or CMBST
- U019 = concentration-based standard = 10 mg/kg
- U037 = concentration-based standard = 6.0 mg/kg
- U045 = concentration-based standard = 30.0 mg/kg
- U080 = concentration-based standard = 30 mg/kg
- U108 = specified technology = CMBST
- U123 = specified technology = CMBST
- U127 = concentration-based standard = 10 mg/kg

- U131 = concentration-based standard = 30 mg/kg
- U159 = concentration-based standard = 36 mg/kg
- U165 = concentration-based standard = 5.6 mg/kg
- U188 = concentration-based standard = 6.2 mg/kg
- U210 = concentration-based standard = 6.0 mg/kg
- U211 = concentration-based standard = 6.0mg/kg
- U220 = concentration-based standard = 10.0mg/kg
- U226 = concentration-based standard = 6.0mg/kg
- U228 = concentration-based standard = 6.0 mg/kg
- U239 = concentration-based standard = 30 mg/kg
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Waste Characterization

- Process knowledge and sampling and analysis have been used to characterize waste streams.
- Confidence level is high based upon the known composition of the solvents used in the processes and of sample analyses for some of the organics.

Radiological Characterization

- Sampling and analysis results indicate tritium present up to 1700 pCi/ml.
- Beta/gamma emitters
- U-238 alpha present is in solvent from the tritium facility and Reactor Materials Facilities.
- Alpha (U-235, U-238, Pu-238, Pu-239) emitters are present.
- Waste is CH.
- Mixed LLW

SR-W003, Solvent-Contaminated Debris (LLW)

The stream is a collection of similar debris whose LDR treatment standards can be met by combustion. The waste stream includes spent solvent-contaminated rags and wipes generated site-wide in the clean up of interior spills and for decontamination. This waste stream also includes job control waste and other incinerable debris. The waste codes indicate the components that may be present in the waste stream as a whole. Waste codes listed in the waste stream would vary depending on where the waste came from within SRS.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Organic debris

Waste Code

- D004 (TCLP As)
- D005 (TCLP Ba)
- D006A (TCLP Cd)
- D007 (TCLP Cr)
- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D010 (TCLP Se)
- D011 (TCLP Ag)
- D012 (Endrin)
- D013 (Lindane)
- D014 (Methoxychlor)
- D015 (Toxaphene)
- D016 (2,4,-D)

- D017 (2, 4, 5-TP)
- D018 (Benzene)
- D019 (Carbon tetrachloride)
- D020 (Chlordane)
- D021 (Chlorobenzene)
- D022 (Chloroform)
- D023 (o-Cresol)
- D024 (m-Cresol)
- D025 (p-Cresol)
- D026 (Total Cresols)
- D027 (p-Dichlorobenzene)
- D028 (1,2-Dichloroethane)
- D029 (1,1-Dichloroethylene)
- D030 (2,4-Dinitrotoluene)
- D031 (Heptachlor)
- D032 (Hexachlorobenzene)
- D033 (Hexachlorobutadiene)
- D034 (Hexachloroethane)
- D035 (Methyl ethyl ketone)
- D036 (Nitrobenzene)
- D037 (Pentachlorophenol)
- D038 (Pyridine)
- D039 (Tetrachloroethylene)
- D040 (Trichloroethylene)
- D041 (2,4,5-Trichlorophenol)
- D042 (2,4,6-Trichlorophenol)
- D043 (Vinyl chloride)
- F001 (Spent halogenated degreasing solvents)
- F002 (Spent halogenated solvents)
- F003A (Spent nonhalogenated solvents)
- F005A (Halogenated and nonhalogenated spent solvents)
- F006 (wastewater treatment sludges from electroplating operations)
- U002 (Acetone)
- U003 (Acetonitrile)
- U019 (Benzene)
- U037 (Chlorobenzene)
- U080 (Methylene chloride)
- U123 (Formic acid)
- U127 (Hexachlorobenzene)
- U131 (Hexachloroethane)
- U159 (Methyl Ethyl Ketone)
- U165 (Naphthalene)
- U188 (Phenol)
- U210 (Tetrachloroethylene)
- U211 (Carbon tetrachloride)
- U220 (Toluene)
- U226 (1,1,1-Trichloroethane)
- U228 (Trichloroethylene)
- U239 (Xylene)
- Non-wastewater

Since this waste stream could include solvent-contaminated rags and wipes from spill clean ups at CIF, waste codes could include any of the wastes treated at CIF. Refer to the waste code lists for SR-W046 and SR-W047 for all of the possible waste codes.

For that portion of waste stream SR-W003 generated from other locations at SRS, waste codes include D004-D011 (TCLP Metals), D012-D043 (organic pesticides and characteristic organics), and F001, F002, F003A, and F005A (halogenated/non-halogenated spent solvents).

Land Disposal Restriction Treatment Standard

- D004 = concentration-based standard = 5.0 mg/L, TCLP
- D005 = concentration-based standard = 21 mg/L, TCLP
- D006 = concentration-based standard = 0.11 mg/L, TCLP
- D007 = concentration-based standard = 0.60 mg/L, TCLP
- D008 = concentration-based standard = 0.75 mg/L, TCLP
- D009 = concentration-based standard = 0.025 mg/L, TCLP
- D010 = concentration-based standard = 5.7 mg/L, TCLP
- D011 = concentration-based standard = 0.14 mg/L, TCLP
- D012 = concentration-based standard = 0.13 mg/kg
- D013 & D031 = concentration-based standard = 0.066 mg/kg
- D014 = concentration-based standard = 0.18 mg/kg
- D015 = concentration-based standard = 2.6 mg/kg
- D016, D018, & D032 = concentration-based standard = 10.0 mg/kg
- D017 = concentration-based standard = 7.9 mg/kg
- D019, D021, D022, D027, D028, D029, D039, D040, & D043 = concentration-based standard = 6.0 mg/kg
- D020 = concentration-based standard = 0.26 mg/kg
- D023, D024, D025, & D033 = concentration-based standard = 5.6 mg/kg
- D026 = concentration-based standard = 11.2 mg/kg
- D030 = concentration-based standard = 140 mg/kg
- D034 = concentration-based standard = 30 mg/kg
- D035 = concentration-based standard = 36 mg/kg
- D036 = concentration-based standard = 14 mg/kg
- D037, D041, & D042 = concentration-based standard = 7.4 mg/kg
- D038 = concentration-based standard = 16 mg/kg
- F001 & F002 = concentration-based standard = 6.0-30 mg/kg
- F003 = concentration-based standard = 0.75 mg/L TCLP-160 mg/kg
- F005 = concentration-based standards = 4.8 mg/L, TCLP-170 mg/kg, except 2 Ethoxyethanol and 2 Nitropropane = CMBST
- F006 = concentration-based standards = 0.11-11 mg/L TCLP
- U002 = concentration-based standard = 160 mg/kg
- U003 = concentration-based standard = 38 mg/kg or CMBST
- U019 = concentration-based standard = 10 mg/kg
- U037 = concentration-based standard = 6.0 mg/kg
- U080 = concentration-based standard = 30 mg/kg
- U123 = specified technology = CMBST
- U127 = concentration-based standard = 10 mg/kg
- U131 = concentration-based standard = 30 mg/kg
- U159 = concentration-based standard = 36 mg/kg
- U165 = concentration-based standard = 5.6 mg/kg
- U188 = concentration-based standard = 6.2 mg/kg
- U210 = concentration-based standard = 6.0 mg/kg
- U211 = concentration-based standard = 6.0 mg/kg
- U220 = concentration-based standard = 10.0 mg/kg

- U226 = concentration-based standard = 6.0mg/kg
- U228 = concentration-based standard = 6.0mg/kg
- U239 = concentration-based standard = 30 mg/kg
- Alternate debris technology may be applied
- D001 through D043 non-wastewaters to be land disposed must be treated to meet the UTS for any UHC that may be present.

Since a portion of this waste stream includes wastes generated at CIF, LDR treatment standards are reflected in the waste fed to CIF. Specific information on treatment standards can be acquired by looking at specific wastes in this volume of the STP. For other constituents of waste stream SR-W003, LDR treatment standards are concentration-based standards ranging from 0.066 mg/kg to 170 mg/kg or with a specified technology of combustion.

Waste Characterization

- Process knowledge is used to characterize the waste stream.
- Confidence level is high based on known composition of the solvents used in the process generating this waste.

Radiological Characterization

- Alpha emitter, Pu-238
- Beta/gamma emitter, Cs-137
- Waste is CH.
- Mixed LLW

SR-W012, Toxic Characteristic Solids

This waste stream contains job control waste from previous treatment facilities such as In-Tank Precipitation (ITP) and CIF as well as various cleanup materials from other site generators contaminated with toxic characteristic waste and radioactive materials (e.g., plastic decon beads, rags, wipes, absorbents, mopheads, gloves). This waste stream also contains solid chemical oxidizers generated by site laboratories and other activities and is a collection of similar debris whose LDR treatment standards can be met by thermal treatment. The list of waste codes indicates the components that may be present in the waste. Waste from specific areas within SRS may not contain all the waste codes. Waste stream SR-W043, Lab Waste with tetraphenyl borate, has been consolidated in this stream.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Organic debris

Waste Code

- D001 (ignitable high TOC)
- D004 (TCLP As)
- D005 (TCLP Ba)
- D006A (TCLP Cd)
- D007 (TCLP Cr)
- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D010 (TCLP Se)
- D011 (TCLP Ag)
- D018 (Benzene)
- D035 (Methyl Ethyl Ketone)
- Non-wastewater

Since this waste stream includes incinerable cleanup materials from CIF, waste codes could include any of the characteristic wastes CIF was permitted to treat during startup and operation. Refer to the waste code list for SR-

W046 and SR-W047 for a list of all the waste codes that fed to CIF. For that portion of waste stream SR-W012 generated from other locations at SRS, waste codes include D004 - D011, D018, and D035.

Land Disposal Restriction Treatment Standard

- D001 = specified technology = RORGS or CMBST
- D004 = concentration-based standard = 5.0 mg/L TCLP
- D005 = concentration-based standard = 21 mg/L TCLP
- D006 = concentration-based standard = 0.11 mg/L TCLP
- D007 = concentration-based standard = 0.60 mg/L TCLP
- D008 = concentration-based standard = 0.75 mg/L TCLP
- D009 = concentration-based standard = 0.025 mg/L TCLP
- D010 = concentration-based standard = 5.7 mg/L TCLP
- D011 = concentration-based standard = 0.14 mg/L TCLP
- D018 = concentration-based standard = 10 mg/kg
- D035 = concentration-based standard = 36 mg/kg
- Alternate debris technology may be applied.
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Since a portion of this waste stream includes wastes generated at CIF, LDR treatment standards are reflected in the characteristic wastes fed to CIF. Specific information on treatment standards can be acquired by looking at specific wastes in this volume of the STP. For other constituents of waste stream SR-W012, LDR treatment standards are concentration-based, ranging from 0.2 to 100 mg/L.

Waste Characterization

- Process knowledge is used to characterize the waste stream.
- Confidence level is medium based on knowledge of contaminants present in the waste or from knowledge of the components in spilled material. However, sampling and analysis have not validated the characterization.

Radiological Characterization

- Alpha (U-235, Pu-238, Pu-239) emitters are present.
- Beta/gamma (Cs-137 and Sr-90) emitters may be present.
- Waste is CH.
- Mixed LLW

SR-W018, Listed Incinerable Solids

This waste stream consists of F006 job control waste, remediation waste from M Area and other site operations, process control waste from M-Area Vendor Treatment operations and remediation activities.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Organic debris

Waste Code

- D006 (TCLP Cd)
- D008 (TCLP Pb)
- D018 (Benzene)
- F005 (Halogenated and nonhalogenated spent solvents)
- F006 (metal plating line waste, without cyanide)
- U080 ((Methylene chloride)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- D006 = concentration-based standard = 0.11 mg/L TCLP
- D008 = concentration-based standard = 0.75 mg/L TCLP
- D018 = concentration-based standard = 10.0 mg/L TCLP
- F005 = concentration-based standards = 4.8 mg/L TCLP-170 mg/kg, except 2-Ethoxyethanol and 2-Nitropropane = CMBST
- F006 = concentration-based standards = 0.11-11 mg/L TCLP
- U080 = concentration-based standard = 30 mg/kg

Waste Characterization

- Process knowledge and sampling and analysis are used to characterize the waste.
- Confidence level high due to availability of sample results and knowledge the process generates listed waste.
- Primary contaminant is Ni. Others included are Cd, Cr, Pb, and Ag, but these are below RCRA LDR concentration standards.

Radiological Characterization

- Typical activity is 5.0E-1 nCi/g
- Alpha emitters are U-234, U-235, U-236, and U-238
- Waste is CH.
- Mixed LLW

SR-W035, Mixed Waste Oil-Sitewide

Waste oil is generated from sitewide preventative maintenance programs such as changing refrigeration oil in the Separations Area chillers and waste oil from lubricating and hydraulic oil changeouts from CIF equipment. Waste oil also includes diesel fuel and ethylene glycol. Routinely, mixed waste oil is not radioactive and could be recycled for energy recovery. However, some drums may have detectable levels of radionuclides, a condition that precludes recycling. Hydraulic or lubricating oil used in chillers often becomes contaminated with Freon®, the refrigerant. Contaminants in the Freon® (D019, D039, D040) also render waste oil a mixed waste. This waste stream includes moratorium/curtailment waste that radiological analysis has shown to be mixed waste, as well as liquids formerly in waste stream SR-W078, LDR Hazardous Waste Awaiting Radiological Screening. Less than Class A limits per 10CFR 61.55.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Organic liquid

Waste Code

- D001A (ignitable high TOC)
- D002 (corrosive non-wastewater)
- D004 (TCLP As)
- D005 (TCLP Ba)
- D006A (TCLP Cd)
- D007 (TCLP Cr)
- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D010 (TCLP Se)
- D011 (TCLP Ag)
- D018 (Benzene)
- D019 (Carbon tetrachloride)
- D022 (Chloroform)

- D029 (1,1-Dichloroethylene)
- D039 (Tetrachloroethylene)
- D040 (Trichloroethylene)
- F001 (Spent halogenated degreasing solvents)
- F005 (Halogenated and nonhalogenated solvents)
- U123 (Formic acid)
- Non-wastewater

This waste stream is forecasted to include wastes generated by CIF operations. Those codes would depend on the specific generation episode at CIF; potentially, any of the many waste codes included in the CIF RCRA permit could apply.

Land Disposal Restriction Treatment Standard

- D001A = specified technology = REORGS, CMBST or POLYM
- D002 = specified technology = DEACT
- D004 = concentration-based standard = 5.0 mg/L TCLP
- D005 = concentration-based standard = 21 mg/L TCLP
- D006 = concentration-based standard = 0.11 mg/L TCLP
- D007 = concentration-based standard = 0.60 mg/L TCLP
- D008 = concentration-based standard = 0.75 mg/L TCLP
- D009 = concentration-based standard = 0.025 mg/L TCLP
- D010 = concentration-based standard = 5.7 mg/L TCLP
- D011 = concentration-based standard = 0.14 mg/L TCLP
- D018 = concentration-based standard = 10.0 mg/kg
- D019, D022, D029, D039, D040 = concentration-based standard = 6.0 mg/kg
- F001 = concentration-based standard = 6-30 mg/kg TCLP
- F005 = concentration-based standards = 4.8 mg/L TCLP-170mg/kg; except 2-Ethoxyethanol, 2-Nitropropane = CMBST
- U123 = specified technology = CMBST
- D001 through D043 non-wastewaters to be land disposed must be treated to meet the UTS for any UHC that may be present.

Waste Characterization

- Sampling and analysis are used to characterize the waste stream.
- Confidence level is high because of TCLP results.
- TCLP has been run on nonradioactive Freon® 11 only.

Radiological Characterization

- Tritium is present in waste stream.
- Waste is CH.
- Mixed LLW.

SR-W042, Paints and Thinners

This waste stream consists of radioactively contaminated, off-specification waste paint, spent paint solvents, and paint chips from paint removal activities.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Organic sludge/particulate

Waste Code

- D001C (ignitable low TOC non-wastewaters)
- D003 (Reactive)
- D004 (TCLP As)
- D005 (TCLP Ba)
- D006A (TCLP Cd)
- D007 (TCLP Cr)
- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D010 (TCLP Se)
- D011 (TCLP Ag)
- D018 (Benzene)
- D035 (Methyl Ethyl Ketone)
- D038 (Pyridine)
- F003A (Xylene, Acetone)
- F005A (Halogenated and nonhalogenated spent solvents)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- D001 = specified technology = REORG or CMBST
- D004 = concentration-based standard = 5.0 mg/L TCLP
- D005 = concentration-based standard = 21 mg/L, TCLP
- D006 = concentration-based standard = 0.11 mg/L, TCLP
- D007 = concentration-based standard = 0.60 mg/L, TCLP
- D008 = concentration-based standard = 0.75 mg/L, TCLP
- D009 = concentration-based standard = 0.025 mg/L, TCLP
- D010 = concentration-based standard = 5.7 mg/L TCLP
- D011 = concentration-based standard = 0.14 mg/L, TCLP
- D018 = concentration-based standard = 10 mg/kg, UTS = 10 mg/kg
- D035 = concentration-based standard = 36 mg/kg, UTS = 36 mg/kg
- D038 = concentration-based standard = 16 mg/kg, UTS = 16 mg/kg
- F003 = concentration-based standards = 0.75 mg/L, TCLP - 160 mg/kg
- F005 = concentration-based standards = 4.8 mg/L, TCLP - 170 mg/kg, except for 2 – Ethoxyethanol, and 2 – Nitropropane = CMBST
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.
- Future generation may include listed spent solvent codes F001, F002, F003, and /or F005.

Waste Characterization

- Confidence level is high because sample and analysis available.

Radiological Characterization

- Alpha and beta/gamma emitters and tritium
- Waste is CH
- Mixed LLW

SR-W051, Spent Filter Cartridges and Carbon Filter Media

The waste stream consists of incinerable filters and filter media. Examples of this waste stream include filters in Naval Fuels used to remove particles contaminated with mercury salts and depleted uranium from the process flow stream. CIF feed tank and offgas high efficiency particulate air (HEPA) filters are also included in this waste.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Heterogeneous debris

Waste Code

- D004 (TCLP As)
- D005 (TCLP Ba)
- D006 (TCLP Cd)
- D007 (TCLP Cr)
- D008A (TCLP Pb)
- D009A (low TCLP Hg)
- D010 (TCLP Se)
- D011 (TCLP Ag)
- D018 (Benzene)
- D019 (Carbon tetrachloride)
- D021 (Chlorobenzene)
- D034 (Hexachloroethane)
- D035 (Methyl Ethyl Ketone)
- D039 (Tetrachloroethylene)
- D040 (Trichloroethylene)
- Non-wastewater

Waste from CIF could contain all the listed waste codes that are fed to CIF and any characteristic waste codes determined by analysis. Refer to waste codes listed for SR-W046 and SR-W047 for a complete list of all waste codes permitted.

Land Disposal Restriction Treatment Standard

- D004 = concentration-based standard = 5.0 mg/L TCLP
- D005 = concentration-based standard = 21 mg/L TCLP
- D006 = concentration-based standard = 0.11 mg/L TCLP
- D007 = concentration-based standard = 0.60 mg/L TCLP
- D008 = concentration-based standard = 0.75 mg/L TCLP
- D009 = concentration-based standard = 0.025 mg/L TCLP
- D010 = concentration-based standard = 5.7 mg/L TCLP
- D011 = concentration-based standard = 0.14 mg/L TCLP
- D018 = concentration-based standard = 10 mg/kg
- D019 = concentration-based standard = 6.0 mg/kg
- D021 = concentration-based standard = 6.0 mg/kg
- D022 = concentration-based standard = 6.0 mg/kg
- D032 = concentration-based standard = 10 mg/kg
- D034 = concentration-based standard = 30 mg/kg
- D039 = concentration-based standard = 6.0 mg/kg
- D040 = concentration-based standard = 6.0 mg/kg
- Alternative debris technology may be applied.
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

CIF waste will have treatment standards that are reflected in the waste fed to CIF and any applicable characteristic waste. Specific information on treatment standards can be acquired by looking at specific wastes in this volume of the STP.

Waste Characterization

- Process knowledge and sample analysis are used to characterize the waste stream.
- Confidence level is high based on sample analysis.

Radiological Characterization

- Beta/gamma emitters are present.
- Alpha emitters (U-233, U-234, and U-238) are present.
- Waste is CH.
- Mixed LLW

SR-W055, Job Control Waste Containing Solvent Contaminated Wipes

This waste is sitewide operations-generated job waste, including radiologically contaminated plastic huts, protective clothing, contaminated metal tools, glass, paper, and cardboard that is suspected to have been mixed with solvent contaminated wipes. Job waste has been declared mixed waste according to the Mixture Rule. Wastes in this stream were declared mixed waste on January 25, 1990. SRS has modified procedures and practices regarding solvent-contaminated wipes generation and management to eliminate or substantially reduce this type of waste.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Organic debris

Waste Code

- F001 (Spent halogenated degreasing solvents)
- F002 (Spent halogenated solvents)
- F003A (Spent non-halogenated solvents)
- F005A (Halogenated and non-halogenated spent solvents)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- F001 and F002 = concentration-based standards = 6.0-30 mg/kg
- F003 = concentration-based standards = 0.75 mg/L TCLP-160 mg/kg
- F005 = concentration-based standards = 4.8 mg/L TCLP-170 mg/kg, except for 2-Ethoxyethanol, and 2-Nitropropane = CMBST
- Alternate debris technology may be applied.

Waste Characterization

- Process knowledge is used to characterize the waste stream.
- Confidence level is medium based on the use of process knowledge to characterize waste. Also, other waste in the waste stream may not actually be contaminated with solvents but are characterized as such according to the Mixture Rule.

Radiological Characterization

- Beta/gamma emitters are present.
- Waste is CH.
- Mixed LLW.

SR-W070, Mixed Waste from Laboratory Samples

This waste stream consists of incinerable lab waste from the analytical testing of groundwater samples taken from the site and processed at onsite or commercial offsite laboratories. It includes sample residues, unused samples, and related laboratory wastes. In addition, this waste stream may include used and unused laboratory reagents. Wastes

included in this stream may consist of both liquid and solid (e.g., soil) matrices. Radiological levels and hazardous constituent levels will depend upon the source location.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Liquids
- Solids

Waste Code

- D001C (ignitable, low TOC)
- D002 (corrosive, non-wastewater)
- D004 (TCLP As)
- D005 (TCLP Ba)
- D006A (TCLP Cd)
- D007 (TCLP 1,1-Dichlorethylene)
- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D010 (TCLP Se)
- D011 (TCLP Ag)
- D018 (TCLP Benzene)
- D019 (Carbon tetrachloride)
- D035 (Methyl Ethyl Ketone)
- D036 (Nitrobenzene)
- D038 (Pyridine)
- D039 (Tetrachloroethylene)
- D040 (Trichloroethylene)
- F001 (unspecified)
- F002 (Methylene chloride)
- F003A (Ethyl ether)
- F004X (unspecified solvents)
- F005 (spent non-halogenated solvents)
- F006 (metal plating waste without cyanide)
- P098 (Potassium cyanide)
- P120 (Vanadium pentoxide)
- U002 (Acetone)
- U003 (Acetonitrile)
- U019 (Benzene)
- U037 (Chlorobenzene)
- U045 (Chloromethane)
- U080 (Methylene chloride)
- U123 (Formic acid)
- U127 (Hexachlorobenzene)
- U131 (Hexachloroethane)
- U144 (Lead acetate)
- U159 (Methyl Ethyl Ketone)
- U188 (Phenol)
- U165 (Naphthalene)
- U204 (Selenium dioxide)
- U210 (Tetrachloroethylene)
- U211 (Carbon tetrachloride)
- U220 (Toluene)

- U226 (1,1,1-Trichloroethane)
- U228 (Trichloroethylene)
- U239 (Xylenes)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- D001 = specified technology = DEACT, or RORGS or CMBST
- D002 = specified technology = DEACT
- D004 = concentration-based standard = 5.0 mg/L, TCLP
- D005 = concentration-based standard = 21 mg/L, TCLP
- D006 = concentration-based standard = 0.11 mg/L, TCLP
- D007 = concentration-based standard = 0.60 mg/L, TCLP
- D008 = concentration-based standard = 0.75 mg/L, TCLP
- D009 = concentration-based standard = 0.025 mg/L, TCLP
- D010 = concentration-based standard = 5.7 mg/L, TCLP
- D018 = concentration-based standard = 10 mg/kg
- D035 = concentration-based standard = 36 mg/L TCLP
- D036 = concentration-based standard = 14 mg/L TCLP
- D019 = concentration-based standard = 6.0 mg/kg
- D038 = concentration-based standard = 16 mg/kg
- D039 = concentration-based standard = 6.0 mg/kg
- D040 = concentration-based standard = 6.0 mg/kg
- F001 = concentration-based standard = 6-30 mg/kg
- F002 = concentration-based standard = 30 mg/kg
- F003 = concentration-based standard = 160 mg/kg
- F004 = concentration-based standard = 6-160 mg/kg
- F005 = concentration-based standard = 4.8 mg/L, TCLP through 170 mg/kg; except 2 – Ethoxyethanol, 2 Nitropropane = CMBST
- F006 = concentration-based standard = 0.19 – 5.0 mg/L, TCLP
- P098 = concentration-based standard = 30-590 mg/kg TCLP
- P120 = specified technology = STABL
- U002 = concentration-based standard = 160 mg/kg
- U003 = specified technology = CMBST
- U019 = concentration-based standard = 10 mg/kg
- U037 = concentration-based standard = 6 mg/kg
- U045 = concentration-based standard = 30 mg/kg
- U080 = concentration-based standard = 30 mg/kg
- U123 = specified technology = CMBST
- U127 = concentration-based standard = 10 mg/kg
- U131 = concentration-based standard = 30 mg/kg
- U144 = concentration-based standard = 0.75 mg/L
- U159 = concentration-based standard = 36 mg/kg
- U165 = concentration-based standard = 5.6 mg/kg
- U188 = concentration-based standard = 6.2 mg/kg
- U204 = concentration-based standard = 5.7 mg/L TCLP
- U210 = concentration-based standard = 6 mg/kg
- U211 = concentration-based standard = 6 mg/kg
- U220 = concentration-based standard = 10 mg/kg
- U226 = concentration-based standard = 6 mg/kg
- U228 = concentration-based standard = 6.0 mg/kg
- U239 = concentration-based standard = 30 mg/kg
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Waste Characterization

- Sampling and analysis are used to characterize the waste stream.
- Confidence level is high because waste has been characterized by sampling and analysis.

Radiological Characterization

- H3, Am-241, Cs-137, Pu-238, Pu-239, Sr-90, U-234, U-235, U-236, and U-238
- <100 nCi/g
- Waste is CH.

SR-W071, Wastewater Suitable for Thermal Treatment or Stabilization

This waste stream consists of wastewaters that are suitable for thermal treatment, stabilization, or macroencapsulation. These wastewaters include aqueous wastes with listed organic constituents that can be incinerated, stabilized, or macroencapsulated in compliance with LDR requirements. Examples include wastewater collected from CIF sumps and aqueous solutions with organic contaminants such as a small volume of outdated ethyl ether in water stored in an analytical laboratory satellite accumulation area. It is anticipated that other wastes of a similar nature could be generated in the future. Wastewaters that do not meet the requirements of 268.3 (c) will be stabilized.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Aqueous liquid

Waste Code

- D002 (corrosive, wastewater)
- D004 (TCLP As)
- D005 (TCLP Ba)
- D006A (TCLP Cd)
- D007 (TCLP Cr)
- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D010 (TCLP Se)
- D011 (TCLP Ag)
- F001 (Spent halogenated degreasing solvents)
- F002 (Spent halogenated solvents)
- F003A (Spent nonhalogenated solvents)
- F005A (Halogenated and nonhalogenated solvents)
- Non-wastewater
- Wastewater

Land Disposal Restriction Treatment Standard

- D002 = specified technology = DEACT and meet UTS
- D004 = concentration-based standard = 5.0 mg/L, TCLP
- D005 = concentration-based standard = 21 mg/L, TCLP
- D006 = concentration-based standard = 0.11 mg/L, TCLP
- D007 = concentration-based standard = 0.60 mg/L, TCLP
- D008 = concentration-based standard = 0.75 mg/L, TCLP
- D009 = concentration-based standard = 0.025 mg/L, TCLP
- D010 = concentration-based standard = 5.7 mg/L, TCLP
- D011 = concentration-based standard = 0.14 mg/L, TCLP
- F001 = concentration-based standard = 6-30 mg/kg

- F002 = concentration-based standard = 6-30 mg/kg
- F003 = concentration-based standard = 0.75 mg/L, TCLP through 60 mg/kg
- F005 = concentration-based standard = 4.8 mg/L, TCLP through 170 mg/kg; except 2-Ethoxyethanol, 2-Nitropropane = CMBST
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Waste from CIF could contain any or all of the listed waste codes that are fed to CIF. The CIF RCRA Part B permit should be consulted for the complete list.

Waste Characterization

- Radiological and chemical analysis will be performed on wastes that are included in this waste stream.
- Confidence level is high because sampling and analysis has been performed.

Radiological Characterization

- Waste is CH.
- Mixed LLW
- Radiological characterization of future waste streams cannot be determined at this time. Both alpha and beta/gamma emitters are expected.

SR-W080, Charleston Naval Shipyard Waste (CN-W001, CN-W004)

This waste stream is composed of flammable or incinerable solids and debris containing potassium chromate and/or contaminated with chromium and/or lead generated from ship overhaul, decommissioning, and routine shipyard maintenance. Charleston Naval Shipyard (CNS) waste was shipped to SRS and placed in RCRA-permitted storage, as concurred by South Carolina Department of Health and Environmental Control (SCDHEC) in December 1995 prior to the closure of the CNS in April 1996. The approved STP listed three waste streams for the CNS waste. However, upon shipment, only two waste streams were received at SRS for storage. The third waste stream, Flammable Organic Debris (CN-W007), was never generated by the Naval Yard.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Codes

- D007 (TCLP Cr)
- D008A (TCLP Pb)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- D007 = concentration-based standard = 0.60 mg/l TCLP
- D008 = concentration-based standard = 0.75 mg/l TCLP
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Waste Characterization

- Process knowledge

Radiological Characterization

- Beta/gamma emitters are present.
- Primary radionuclide constituent = Co60
- Waste is CH.

SR-W081, Reactive/Ignitable Waste

This waste stream is currently composed of Savannah River National Laboratory (SRNL) laboratory wastes generated as a result of preparing metal specimens for examination in the transmission electron microscope. Metal disks were electropolished using a solution of perchloric acid, butyrosolve, and methanol. Because of its reactivity, the spent perchloric acid solution is deactivated with distilled water in the storage area.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Aqueous liquid

Waste Codes

- D001A (ignitable high TOC)
- D003E (other reactive)

Land Disposal Restriction Treatment Standard

- D001 = specified technology = RORGS or CMBST
- D003 = specified technology = DEACT
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Waste Characterization

- Process knowledge
- Confidence level is high based upon the known composition and quantity of chemicals used to formulate the perchloric acid polishing solution.

Radiological Characterization

- Radionuclide constituent - Co-60, H3, Pu-239, Pu-238
- Waste is CH.

SR-W087, Bettis Atomic Power Laboratory Contaminated Oil, (BT-W035 part of BT-W003)

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Organic debris

Waste Code

- D006 (TCLP Cd)
- D008A (TCLP Pb)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- D006 = concentration-based standard = 0.11 mg/L TCLP
- D008A = concentration-based standard = 0.75 mg/L TCLP

Waste Characterization

- Sample results
- Process knowledge

Radiological Characterization

- Beta/gamma emitters are present.
- Primary radionuclide constituent = U233
- Waste is CH.

3.1.2.7 Commercial Vendor Deactivation Treatment

SR-W034, Calcium Metal (Consolidated with SR-W081)

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Inorganic debris

Waste Code

- D003 (Reactivity)

Land Disposal Restriction Treatment Standard

- D003 = deactivation

Waste Characterization

- Process knowledge

Radiological Characterization

- Waste is CH.

3.2 Mixed Low-Level Waste Streams Requiring Technology Development

Due to the complexity of some waste streams, technologies have not been developed that can adequately treat the waste. Therefore treatment strategies for some waste streams have not been selected. This section addresses those mixed LLW streams that require technology development for the treatment of the waste stream.

3.2.1 Development of Mobile Unit Technology

Currently, there are no waste streams in this category.

3.2.2 Development of Characterization Technology

The waste stream, SR-W056, Job Control Waste with Enriched Uranium and Solvent-Contaminated Wipes, previously included in this section, has been determined to be non-hazardous. Currently, there are no additional waste streams requiring development of chemical characterization technology.

3.2.3 Development of Treatment Technology

Waste stream SR-W045, PUREX organic waste, was previously planned to be treated by thermal treatment at CIF. On June 26, 2006, SCDHEC agreed to transfer closure and decommissioning of CIF to the Federal Facility Agreement (FFA). The current treatment for waste stream SR-W045 (PUREX) is stabilization followed by macroencapsulation via a site-specific one-time treatability variance granted by EPA-4 on February 26, 2008. This variance was granted as a contingency in the event that the final stabilized form did not meet LDR. This treatment method would have allowed treatment of this waste stream to be completed on a greatly accelerated time scale and at a considerable cost-savings compared to CIF. SRS has awarded a subcontract to treat SR-W045 beginning in FY08.

An organic solvent generated in the Plutonium/Uranium Extraction Process (PUREX) used in the Separations areas, SR-W044, Tri-Butyl-Phosphate and n-Paraffin TRU, has been combined with this waste stream.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Organic liquid

Waste Code

- D004 (TCLP As)
- D005 (TCLP Ba)
- D006A (TCLP Cd)
- D007 (TCLP Cr)
- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D010 (TCLP Se)
- D011 (TCLP Ag)
- D018 (Benzene)
- D040 (Trichloroethylene)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- D004 = concentration-based standard = 5.0 mg/L TCLP
- D005 = concentration-based standard = 21 mg/L TCLP
- D006 = concentration-based standard = 0.11 mg/L TCLP
- D007 = concentration-based standard = 0.60 mg/L TCLP
- D008 = concentration-based standard = 0.75 mg/L TCLP
- D009 = concentration-based standard = 0.025 mg/L TCLP
- D010 = concentration-based standard = 5.7 mg/L TCLP
- D011 = concentration-based standard = 0.14 mg/L TCLP
- D018 = concentration-based standard = 10 mg/kg
- D040 = concentration-based standard = 6 mg/kg
- D001 through D043 non-wastewaters to be land disposed must be treated to meet the UTS for any UHC that may be present.

Waste Characterization

- Sampling and analysis are used to characterize the waste stream.
- Confidence level is high because sampling and analysis is available.

Radiological Characterization

- Total activity is 120 nCi/g.
- Cm-244, Am-241, Pu-239, Eu-154, Ba-137, H3, Pu-241, Sb-125, Cm-243, Pu-240, Tc-99, Pu-238, and Cs-137; lesser amounts of Zr-95, Th-234, Zn-65, Pr, Pr-144, Co-60, Ag-110m, C-14, Co-57, Eu-155, I-129, Na-22, Pa-234m, Pu-242, Se-79, Sr-90, U-233, U-234, U-235, U-238, and Y-90
- Waste is CH.
- Mixed LLW.

3.3 Mixed Low-Level Waste Streams for Which Further Characterization is Required

This section discusses the schedules for those specific waste streams that require further chemical or radiological characterization prior to the selection of a PO. The categories in this section are divided into waste streams to be further characterized and hazardous wastes awaiting radiological screening.

3.3.1 Waste Streams to be Further Characterized

Currently, there are no waste streams in this category. The waste streams previously assigned to this category, SR-W025, Solvent/TRU Job Control Waste <100 nCi/g and SR-W033, Thirds/TRU Job Control Waste <100 nCi/g, have been relocated to Section 4.2.2 of Chapter 4 of this volume.

3.3.2 Hazardous Waste Awaiting Radiological Screening

The PO for the waste streams in this waste group is the development of sampling protocols to verify that SRS has not introduced radiological contamination or analytical techniques to properly characterize the radiological constituents in the waste. Afterward, waste can be appropriately classified as mixed or hazardous only, and the proper management can be identified. Waste characterized as mixed will undergo technical analysis for treatment option identification or be placed into an existing waste treatment category.

General Information

At present, there are no wastes in this group.

3.4 Mixed Low-Level Waste Streams Requiring Radionuclide Decay Prior to Land Disposal Restriction Treatment

Radioactive Decay Waste Group

The PO for Radioactive Decay Waste Group is treatment by aging in a regulated storage facility followed by combustion and/or appropriate mercury treatment.

General Information

At the present time, the sole representative of this waste group is:

SR-W036, Tritiated Oil with Mercury

This waste stream consists of used oil from pumps and compressors operated in the tritium facilities. The oil is contaminated with tritium and mercury. Reliable characterization is hindered because of concerns about exposure of laboratory personnel to the high levels of radiation in the oil. Moreover, the radiation has the potential to cause scintillation counting interferences. The possibility of mercury contamination has been established, but the concentration has not been quantified. Greater than Class A limits per 10CFR 61.55

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Other inorganic particulates

Waste Code

- D009E (hydraulic oil contaminated with Hg and radioactive materials)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- D009 = Specified Technology = Incineration of Wastes Containing Organics and Mercury, (IMERC)

Waste Characterization

- Process knowledge is used to characterize the waste stream.
- Confidence level is low. High tritium levels prevent analysis.

Radiological Characterization

- Tritium contamination variable (background to ~ 185 Ci/l).
- Waste is CH.
- Mixed LLW.

SR-W090, Elemental Mercury (High Rad)

This waste stream consists of used elemental mercury that has become contaminated with tritium and exhibits concentrations of tritium that exceed our current commercial vendor's acceptance criteria.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Other inorganic particulates

Waste Code

- D009D

Land Disposal Restriction Treatment Standard

- AMALGM

Waste Characterization

- Process knowledge is used to characterize the waste stream.
- Confidence level is low. High tritium levels prevent analysis.

Radiological Characterization

- Tritium contamination variable
- Waste is CH.
- Mixed LLW.

3.5 SRS Treatment Facilities That Have Discontinued/Suspended Operations

3.5.1 Consolidated Incineration Facility (CIF)

The CIF responsibilities have been moved to the FFA for SRS.

3.5.2 Recycling

Recycling in D-Area Heavy Water Facility was the PO for certain waste streams, including the following:

SR-W032A, Mercury Contaminated Heavy Water

Completion of treatment of SR-W032A, Mercury Contaminated Heavy Water occurred September 25, 1997, at the D-Area Heavy Water Facility, which closed on September 30, 1999. No additional waste is awaiting treatment.

3.5.3 M-Area Vendor Treatment

This option has been completed.

3.5.4 Decontamination

Decontamination in an existing onsite facility was the PO for certain mixed waste streams, including, but not limited to, the following:

SR-W013, Low-Level Waste (LLW) Lead- to be Decontaminated

Completion of treatment of SR-W013 occurred January 31, 2002, when no deconnable lead was in RCRA storage. Future deconnable lead is managed as useable material and is decontaminated on a regular basis.

Appendix for LDR Compliant Wastes

This appendix contains descriptive information on waste streams that do not appear in the Compliance Plan Volume PO discussion because they meet the LDR treatment standard, meet the LDR standard when they are generated, have been treated and closed as a stream, or are recycled (includes scrap metal).

SR-W007, SRNL Sample material

This waste stream has been eliminated.

SR-W008, Separations Area Sample Receipts from SRNL

This waste stream has been consolidated with SR-W017.

SR-W011, Cadmium-Coated HEPA Filters

These filters are recycled under the Scrap Metal Exclusion.

SR-W015, Mercury-/Tritium-Contaminated Equipment

Retired process equipment (mostly pumps) contaminated with tritium, sometimes mercury (HWI #002), sometimes lead (HWI #033), and sometimes silver (HWI #0057).

Retired equipment has both adsorbed and matrix-diffused tritium contamination and wetted-surface mercury residues from direct contact with process gases. Lead is present in some of the equipment (fuel cells, solder and lead collars).

Volume

- Data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Predominantly metal debris

Waste Code

- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D011 (TCLP Ag)

Land Disposal Restriction Treatment Standard

- D008A = concentration-based standard = 0.75 mg/L TCLP
- D009A = concentration-based standard = 0.025 mg/L TCLP
- D011 = concentration-based standard = 0.14 mg/L TCLP

Waste Characterization

- Process Knowledge

Radiological Characterization

- U-238 and tritium present

SR-W020, Salt Processing Filters

These filters may be a future debris waste stream. The filters are used in the treatment and separation of salt solution in preparation for processing in the DWPF and Saltstone Facility. The salt solution is treated to remove radioactive cesium and to adsorb strontium and plutonium. This process is expected to eventually foul the filters, requiring their removal, treatment, and disposal.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Inorganic debris

Waste Code

- D009A (TCLP Hg)
- D018 (Benzene)
- D036 (Nitrobenzene)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- D009 = concentration-based standard = 0.025 mg/L TCLP
- D018 = concentration-based standard = 10 mg/kg
- D036 = concentration-based standard = 14 mg/kg
- Alternate debris technology may be applied.
- D001 through D043 non-wastewaters to be land disposed must be treated to meet the UTS for any UHC that may be present.

Waste Characterization

- Process knowledge is used to characterize the waste stream.
- Confidence level is medium since this waste stream has not yet been generated.
- Typical expected concentration is 236 g Hg per filter. This is estimated by calculation.

Radiological Characterization

- Total activity is estimated to be 64-3400 Ci/filter.
- Beta/gamma emitters are Cs137, Cs134, Sr90, Tc99, Ru106, Sb125, and I129.
- Waste is remote handled (RH).
- Mixed LLW

SR-W023, Cadmium Safety/Control Rods

The safety/control rods are steel encapsulated, cadmium containing rods used to control neutron flux in the reactors. The rods are approximately 22 feet long, one inch in diameter. The Cadmium rods are macroencapsulated by being placed in a stainless or mild steel container that is welded closed. One rod was cut and placed in a drum; other rods were not cut prior to placement in a box.

Volume

- Volume Data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Cadmium-containing metal debris

Waste Code

- D006A (TCLP Cd)

Land Disposal Restriction Treatment Standard

- D006A = concentration-based standard = 0.11 mg/L TCLP
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Waste Characterization

- Sample Results

Radiological Characterization

- Beta/gamma emitters present

SR-W024, Mercury/Tritium Gold Traps

Elemental mercury has been amalgamated on gold foil. A typical trap consists of a stainless steel cylindrical housing that is 38 inches high and 2 inches in diameter that contains gold foil on 16 evenly spaced trays. Each trap contains ~125 g of elemental gold. Contamination is variable, depending on use and changeout frequency. Retired traps typically show surface amalgamation on ~1/4 of the gold, and contain 0.6 g of bound mercury. The estimated tritium contamination is 200 Ci per trap and is deemed conservative.

Volume

- Volume Data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Metal debris

Waste Code

- D009A (TCLP Hg)

Land Disposal Restriction Treatment Standard

- D009A = concentration-based standard = 0.025 mg/L TCLP
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Waste Characterization

- Process knowledge

Radiological Characterization

- Tritium is present

SR-W032B, Mercury-Contaminated Heavy Water Residues

Heavy Water Operations laboratory in D Area generated waste stream SR-W032A, "Mercury-Contaminated Heavy Water" during analytical testing using mercuric chloride. The flush water from this analysis was collected and managed as hazardous waste. That waste stream is no longer generated due to a change in analysis procedures. The mercury content is now below toxic limits. SR-W032B is the residue from treatment of SR-W032A.

Volume

- Volume Data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Non-wastewater

Waste Code

- D009A (TCLP Hg)

Land Disposal Restriction Treatment Standard

- D009A = concentration-based standard = 0.025 mg/L TCLP
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Waste Characterization

- Sample results

Radiological Characterization

- Tritium is present

SR-W040, Listed Stabilized Sludge/Listed LDR-Compliant Debris

This waste is a stabilized sludge generated from the treatment of nickel-plating line waste water and is stored in the M-Area pad. Also includes equipment, associated with the vitrification treatment process, which meets LDR. This includes an approximately 90,000 lb (gross weight) melter (14.3 m³) full of treated F006 waste and small amounts of debris/spill material, which meets the LDR standards. The stream will also include debris items, meeting LDR, that were generated by CIF operations or RCRA-listed contaminated soil.

Volume

- Volume Data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Stabilized sludge and miscellaneous debris

Waste Code

- F001–F003, F005 (halogenated and non-halogenated spent solvents)
- F006 (wastewater treatment sludges from electroplating operations)
- F028 (residues from thermal treatment of F020, F021, F026, and F027 wastes)
- U002 (Acetone)
- U003 (Acetonitrile)
- U019 (Benzene)
- U037 (Chlorobenzene)
- U080 (Methylene chloride)
- U123 (Formic acid)
- U127 (Hexachlorobenzene)
- U131 (Hexachloroethane)
- U159 (Methyl ethyl ketone)
- U165 (Naphthalene)
- U188 (Phenol)
- U210 (Tetrachloroethylene)
- U211 (Carbon tetrachloride)
- U220 (Toluene)
- U226 (1,1,1-Trichloroethane)
- U228 (Trichloroethylene)
- U239 (Xylenes)

Land Disposal Restriction Treatment Standard

- F001 and F002 = concentration-based standard = 6.0 – 30 mg/kg
- F003 = concentration-based standard = 0.75 mg/L, TCLP – 160 mg/kg
- F005 = concentration-based standard = 4.8 mg/L, TCLP – 170 mg/kg except 2-Ethoxyethanol and 2-Nitropropane = CMBST
- F006 = concentration-based standard = 0.11 – 11 mg/L TCLP
- F028 = = concentration-based standard = = 0.001 to 7.4 mg/kg

- U002 = concentration-based standard = 160 mg/kg
- U003 = concentration-based standard = 38 mg/kg or CMBST
- U019 = concentration-based standard = 10 mg/kg
- U037 = concentration-based standard = 6.0 mg/kg
- U080 = concentration-based standard = 30 mg/kg
- U123 = specified technology = CMBST
- U127 = concentration-based standard = 10 mg/kg
- U131 = concentration-based standard = 30 mg/kg
- U165 = concentration-based standard = 5.6 mg/kg
- U188 = concentration-based standard = 6.2 mg/kg
- U210 = concentration-based standard = 6.0 mg/kg
- U211 = concentration-based standard = 6.0 mg/kg
- U220 = concentration-based standard = 10.0 mg/kg
- U226 = concentration-based standard = 6.0 mg/kg
- U228 = concentration-based standard = 6.0 mg/kg
- U239 = concentration-based standard = 30 mg/kg

Waste Characterization

- Sample results

Radiological Characterization

- Alpha and beta/gamma emitters present

SR-W041, Aqueous Mercury and Lead

Six small (e.g., 2 liters, 4 liters, etc.) containers of aqueous waste with lead and mercury overpacked in a poly-lined 55-gal drum. An additional 55-gal drum in this waste stream is rinsate from the rinsing of Tank E-3-1, which contains low levels of mercury.

Volume

- Volume Data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Aqueous Liquid

Waste Code

- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D009C (high Hg contains inorganics) wastewater

Land Disposal Restriction Treatment Standard

- D008 = concentration-based standard = 0.75 mg/L TCLP
- D009 = concentration-based standard = 0.20 mg/L TCLP; or RMERC
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Waste Characterization

- Sample Results

Radiological Characterization

- Alpha emitters, beta/gamma emitters, and tritium are present.

SR-W046, Consolidated Incineration Facility (CIF) Ash

This waste stream has been eliminated.

SR-W047, Consolidated Incineration Facility (CIF) Blowdown

This waste stream has been eliminated.

SR-W050, Waste to support High-Level Waste (HLW) Processing Demonstrations

The waste will be generated by laboratory research, development, and analytical programs at SRNL to support the operations of the DWPF.

This waste stream will be generated by shielded cell operations during projects for the glass technology group and will come from demonstrations of the DWPF and Interim Waste Technology (IWT) processes on actual HLW samples.

The liquid waste will most likely contain mercury and chromium. The chromium will most likely be at low levels, below TCLP.

Volume

- Volume Data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Aqueous slurry

Waste Code

- D007 (Chromium)
- D009A (TCLP Hg)
- D018 (Benzene)

Land Disposal Restriction Treatment Standard

- D007 = concentration-based standard = 0.60 mg/L TCLP
- D009 = concentration-based standard = 0.20 mg/L TCLP; or RMERC
- D018 = concentration-based standard = 10 mg/kg
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Waste Characterization

- Sample results and process knowledge

Radiological Characterization

- Beta/gamma emitters are present.

SR-W058, Mixed Sludge Waste with Mercury from DWPF Treatability Studies

This waste stream consisted of small amounts of high-level waste supernate, sludge, and salt samples from the tank farm and mercury contamination generated during DWPF treatability studies. The waste mercury sludge dried and caked onto eight centrifuge tubes and a glass bottle.

Volume

- Volume Data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Organic debris - glass

Waste Code

- D009A (TCLP Hg) non-wastewater

Land Disposal Restriction Treatment Standard

- D009A = concentration-based standard = 0.20 mg/L TCLP; or RMERC
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Waste Characterization

- Sample results

Radiological Characterization

- Beta/gamma emitters present

SR-W063, Macroencapsulated Low-Level Waste, Toxic Characteristic (TC)

This waste consists of a wide variety of miscellaneous macroencapsulated lead items contaminated with radioactive materials. The majority of the lead is encapsulated in stainless steel. The lead items include lead counterweighted jumpers (lead welded in pipe for balancing jumpers), cesium removal columns (CRC) (lead sandwiched between stainless steel for shielding purposes), draw-off valves, flush valves, and discarded equipment (same description as CRC configuration). These wastes generally are used as shields from radioactivity (e.g., around pipes in tank farms) as counterweights or serve as parts of other devices. The majority of the radioactive contamination is surface contamination. The waste is generated in reactor areas, and fuel and target and separation areas, and laboratories. Future generation rates are dependent upon Site decommissioning activities. Lead that continues to serve its function is not considered a mixed waste, but is reviewed in the site's contaminated equipment program for appropriate disposition. SR-W063 is combined with SR-W040.

Volume

- Volume Data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Macroencapsulated inorganic debris

Waste Code

- D004 (Arsenic)
- D005 (Barium)
- D006A (TCLP Cd)
- D007 (Chromium)
- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D010 (Selenium)
- D011 (Silver)

Land Disposal Restriction Treatment Standard

- D004 = concentration-based standard = 5.0 mg/L, TCLP
- D005 = concentration-based standard = 21 mg/L, TCLP
- D006A = concentration-based standard = 0.11 mg/L, TCLP
- D007 = concentration-based standard = 0.60 mg/L, TCLP
- D008A = concentration-based standard = 0.75 mg/L, TCLP
- D009A = concentration-based standard = 0.025 mg/L, TCLP
- D010 = concentration-based standard = 5.7 mg/L, TCLP
- D011 = concentration-based standard = 0.14 mg/L, TCLP
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Waste Characterization

- Process knowledge

Radiological Characterization

- Alpha and beta/gamma emitters are present.

SR-W072, Supernate or Sludge Contaminated Debris from High-Level Waste Operations

This waste consists of a wide variety of equipment/metal debris and other items contaminated with radioactive materials and characteristically hazardous waste. The waste is derived from contacting HLW. The majority of the contamination is surface contamination. Future generation rates are dependent upon construction operations, maintenance activities, and site decommissioning activities.

Volume

- Volume Data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Inorganic debris

Waste Code

- D005 (Barium)
- D006A (TCLP Cd)
- D007 (Chromium)
- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D010 (Selenium)
- D011 (Silver)
- D018 (Benzene)

Land Disposal Restriction Treatment Standard

- D005 = concentration-based standard = 21 mg/L, TCLP
- D006A = concentration-based standard = 0.11 mg/L, TCLP
- D007 = concentration-based standard = 0.60 mg/L, TCLP
- D008A = concentration-based standard = 0.75 mg/L, TCLP
- D009A = concentration-based standard = 0.025 mg/L, TCLP
- D010 = concentration-based standard = 5.7 mg/L, TCLP
- D011 = concentration-based standard = 0.14 mg/L, TCLP
- D018 = concentration-based standard = 10 mg/kg
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Waste Characterization

- Process knowledge

Radiological Characterization

- Alpha and beta/gamma emitters are present

SR-W078, LDR Hazardous Waste Awaiting Radiological Screening

This stream has been closed, and all previous 078 wastes have been screened. The waste stream is composed of dark liquids, thick organic liquids, and heterogeneous solids generated site-wide in areas where radiological contamination is possible but uncertain. The physical makeup of the remainder of this waste stream has prevented adequate radiological characterization to date because the waste is either heterogeneous, requiring development of special, recognized sampling protocols to satisfactorily sample the waste for characterization; or, is opaque, requiring specialized analytical methods to quantify and qualify radiological waste constituents.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Heterogeneous solids, dark liquids, and thick organic liquids

Waste Codes

- D001A (ignitable high TOC)
- D004 (TCLP As)
- D005 (TCLP Ba)
- D006A (TCLP Cd)
- D007 (TCLP Cr)
- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D010 (TCLP Se)
- D011 (TCLP Ag)
- D012 (Endrin)
- D013 (Lindane)
- D014 (Methoxychlor)
- D015 (Toxaphene)
- D016 (2,4-D)
- D017 (2, 4, 5-TP [Silvex])
- D018 (Benzene)
- D020 (Chlordane)
- D035 (Methyl ethyl ketone)
- D040 (Trichloroethylene)
- F001 (spent halogenated degreasing solvents)
- F002 (spent halogenated solvents)
- F003 (spent nonhalogenated solvents)
- F005 (spent nonhalogenated solvents)
- F027 (Dioxin-containing waste)
- P051 (Endrin)
- P123 (Toxaphene)
- U045 (Methyl chloride)
- U061 (DDT)
- U108 (1,4-Dioxane)
- U129 (Lindane)
- U210 (Tetrachloroethylene)
- U226 (1,1,1 trichloroethane)
- U228 (Trichloroethylene)
- U247 (Methoxychlor)
- Non-wastewater

Land Disposal Restriction Treatment Standards

- D001 = specified technology = RORGS or CMBST
- D004 = concentration-based standard = 5.0 mg/L TCLP
- D005 = concentration-based standard = 21 mg/L TCLP
- D006 = concentration-based standard = 0.11 mg/L TCLP
- D007 = concentration-based standard = 0.60 mg/L TCLP
- D008 = concentration-based standard = 0.75 mg/L TCLP
- D009 = concentration-based standard = 0.025 mg/L TCLP
- D011 = concentration-based standard = 0.14 mg/L TCLP
- D012 = concentration-based standard = 0.13 mg/kg
- D013 = concentration-based standard = 0.066 mg/kg
- D014 = concentration-based standard = 0.18 mg/kg

- D015 = concentration-based standard = 2.6 mg/kg
- D016 = concentration-based standard = 10 mg/kg
- D017 = concentration-based standard = 7.9 mg/kg
- D018 = concentration-based standard = 10 mg/kg
- D020 = concentration-based standard = 0.26 mg/kg
- D035 = concentration-based standard = 36 mg/kg
- D040 = concentration-based standard = 6.0 mg/kg
- F001 & F002 = concentration-based standard = 6.0-30 mg/kg
- F003 = concentration-based standard = 0.75 mg/L, TCLP-160 mg/kg
- F005 = concentration-based standard = 4.8 mg/L TCLP-170 mg/kg, except 2-Ethoxyethanol, 2-Nitropropane = CMBST
- F027 = concentration-based standard = 10 - 28 mg/kg (depends on specific chemical)
- P051 = concentration-based standard = 0.13 mg/kg
- P123 = concentration-based standard = 2.6 mg/kg
- U045 = concentration-based standard = 30 mg/kg
- U061 = concentration-based standard = 0.087 mg/kg
- U108 = specified technology = CMBST; or = concentration-based standard = 170 mg/kg
- U129 = concentration-based standard = 0.066 mg/kg
- U210 = concentration-based standard = 6.0 mg/kg
- U226 = concentration-based standard = 6.0 mg/kg
- U228 = concentration-based standard = 6.0 mg/kg
- U247 = concentration-based standard = 0.18 mg/kg
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Waste Characterization

- Process knowledge and sampling and analysis were used to characterize the waste stream.
- Confidence level is high because there is extensive process knowledge and because sampling and analysis has been performed on portions of the waste stream.

Radiological Characterization

- Unknown at this time. Awaiting characterization. Level of radiological contamination very low, if present.

CHAPTER 4. MIXED TRANSURANIC WASTE

The current DOE strategy for management of mixed transuranic (MTRU) waste is to maintain the MTRU wastes in safe interim storage; to characterize, certify, process if necessary, and package the wastes to meet the Waste Acceptance Criteria (WAC) of the Waste Isolation Pilot Plant (WIPP); and to permanently dispose of applicable MTRU waste in WIPP. The Defense Authorization Bill for Federal FY 97, which contained amendments to the 1992 WIPP Land Withdrawal Act, was signed by the President on September 22, 1996, and the Secretary of Energy declared WIPP open and ready to receive waste in May 1998.

The amendments also exempt DOE from the requirement to obtain a RCRA no-migration determination from EPA. EPA agrees that the no-migration determination is redundant to the more stringent radioactive waste disposal standard, and that the exemption will not jeopardize the environment. WIPP has obtained a RCRA Part B Permit from the State of New Mexico to receive MTRU waste for disposal.

Site-specific information is included in the following section to outline activities being performed at SRS to maintain safe compliant storage, waste characterization activities, and other activities planned to support the ultimate goal of shipment to and disposal at WIPP.

This chapter reviews the project activity schedules that have been planned for the treatment of MTRU waste in accordance with Section 2.2 of this volume. Section 4.1 discusses the site's MTRU waste management approach and Section 4.2 details the MTRU waste streams that are proposed to be shipped to WIPP for treatment. Refer to Volume 1, Table 1.1, of the STP for the user's guide. The user's guide identifies each mixed waste stream, the PO, and identifies the section in which the waste stream is discussed in this STP.

4.1 Site MTRU Waste Management Approach

Transuranic (TRU) waste is defined in DOE Order 435.1 as waste contaminated with alpha-emitting transuranic radionuclides (radionuclides with atomic numbers greater than 92) with half-lives greater than twenty (20) years and radionuclide concentrations greater than 100 nCi/g. TRU waste at SRS that includes hazardous constituents as identified in 40 CFR 261 and SCHWMR R61-79.261 is managed in accordance with DOE orders and South Carolina Hazardous Waste Management Regulations (SCHWMR), and is referred to as MTRU.

MTRU waste streams are, and have been, generated primarily by Plutonium Separations Facilities and the Analytical Laboratories. Other past generators of significantly smaller volumes include Naval Fuels Facility, the Reactor Facility, the Fuel Fabrication Facility, the High-Level Waste Tank Farms, and the Solid Waste Management Facility. In the 1970s, SRS received a large volume of MTRU waste from offsite generators, including the Los Alamos National Laboratory, Knolls Atomic Power Laboratory, and the DOE Mound Site. MTRU waste shipments have been received from the DOE Mound Site since September 2001 (see Vol. II, Sec. 4.2.2). DOE needs to dispose of approximately 37 m³ of TRU waste generated as part of the cleanup of the Battelle Columbus Laboratory West Jefferson site near Columbus, Ohio. Battelle Columbus TRU waste consists of CH and remote-handled (RH), based on the radiation level at the surface of the waste container. Some TRU waste is also mixed waste, having both radioactive and hazardous components. The initial 37 m³ consist of approximately 12 m³ CH TRU waste and 25 m³ RH TRU waste.

MTRU waste generated at SRS is primarily job control waste, which includes combinations of the following: plastic, paper, rubber, glassware, metal items, lead-lined gloves, filters, used equipment, and other contaminated materials from routine operations. Due to the variety of container types, MTRU waste is generally described by its container: drums, polyethylene boxes, concrete casks, large steel black boxes, and other odd-sized containers. The type of container also dictates the storage configuration; for example, drums are either stored in culverts, which are stored on uncovered pads exposed to the weather, or stored directly on covered pads. Currently, nine waste streams are managed as MTRU waste.

The waste streams identified as MTRU waste are shown below:

Waste Stream No.	Description
SR-W006	CH MTRU/Liquids
SR-W009	Silver-Coated Packing Material
SR-W025	Solvent/TRU Job Control Waste <100 nCi/g (Consolidated with SR-W091)
SR-W026	CH Mixed TRU/Thirds (Consolidated with SR-W027)
SR-W027	CH Mixed TRU
SR-W033	Thirds/TRU Job Control Waste <100 nCi/g
SR-W053	Rocky Flats Ash
SR-W089	MTRU Waste Received from Mound Site
SR-W092	MTRU Waste Received from Battelle Columbus Site

Waste streams SR-W025 and SR-W033 are categorized as <100 nCi/g but are managed as TRU waste. These two streams potentially fit into one or more waste classifications. These waste streams will be further characterized and the portion that is MTRU (>100 nCi/g) will be sent to WIPP. The remaining mixed low-level component may be used to blend high activity MTRU wastes down to meet the transportation and packaging limits for transportation to WIPP for disposal. Estimates indicate that the largest fraction of these two waste streams will fall into the mixed LLW category.

SRS Solid Waste Management Strategy

The SRS solid waste management strategy supports and is in alignment with the National TRU Program Initiatives. The TRU waste program includes identification, characterization/certification and disposition of TRU waste to WIPP for final disposal. WIPP started accepting DOE-Complex TRU waste in December 1999. Since that time, SRS has made 7 shipments of TRU waste in FY01, 16 in FY02, 185 in FY03, 239 in FY04, 125 in FY05, 115 in FY06, 122 in FY07, 123 in FY08, 105 in FY09, 70 in FY10, and as of August 31, 2011, 122 shipments in FY11. SRS has shipped a total of approximately 7,500 m³ of TRU waste to WIPP at this time.

Plan Assumptions

The MTRU waste plan is based on the following key assumptions:

- Funding is available to support the plan.
- Negotiations with WIPP, the Nuclear Regulatory Commission (NRC), and other environmental agencies to revise the restrictive transportation limits of the TRUPACT II are successful.
- WIPP does not close prior to 2034.
- Processes are planned to be put in place to process MTRU waste for shipment to WIPP.
- Assay techniques for Pu-238 contaminated wastes and larger containers will be pursued and implemented at SRS using onsite and offsite technology to meet the requirement of the WIPP WAC and WIPP Quality Assurance Program.
- A Modular TRU Waste Repackaging System is planned to be operational at SRS to process MTRU waste drums for shipment to WIPP.

Plan Activities

The SRS solid waste management strategy addresses the following activities and provides a path forward for resolution:

- Interim storage
- TRU Waste Certification
- TRU Waste Processing
- Outyear Schedule

Interim Storage

SRS continues to safely store MTRU waste containers in preparation for WIPP characterization and disposal. Operations commenced in 2003 to vent approximately 4,000 drums that were generated prior to 1986. Vents are installed to allow the release of potential hydrogen gas buildup.

MTRU Waste Certification/Characterization

Activities in the MTRU waste area involve extensive preparation for the certification of containers to meet the WIPP WAC. The WIPP certification program requires characterization of the waste matrix through radionuclide assay, radiography, and headspace gas sampling for all waste containers. In addition, a representative number of containers must be opened for visual examination to confirm the characterization information. SRS has designated a portion of TRU pad 6 for the visual examination (VE) facility.

SRS utilizes a Mobile Vendor for the inspection/characterization and shipment of TRU waste from SRS to WIPP. The Mobile Vendor mobilized in 2QFY01 and began characterization operations in 4QFY01. The Mobile Vendor provides this characterization and shipping capability through the use of four mobile systems. The first is a real time radiography system that is used to x-ray TRU drums to determine drum contents and waste attributes. Following x-ray, the drums are processed through one of two non-destructive assay trailers. One system uses a segmented gamma scanner (SGS) to provide information to determine the isotopic composition of each TRU waste drum. A second system uses gamma spectroscopy (IQ3). After assay the drums are placed into heated sealand storage containers for 72 hours prior to head space gas sampling. The fourth mobile system is the drum headspace gas sampling system. This system utilizes a gas chromatograph (GC) and mass spectrometer (MS) to analyze the constituents of the TRU drum headspace gases. The drums are then moved to the final system which is the mobile loading unit. This system contains the adjustable center gravity lift fixture, shrink wrap machine and equipment necessary to configure and load TRU drums into TRUPACT-II containers for transport to WIPP for disposal. These systems are currently set-up on existing TRU waste storage Pads #4 and #3, although future systems, such as additional radiography trailers, may be set up near the TRU pads. In these situations, containers are transported one at a time for appropriate screening or analysis and returned to the TRU pads. The Visual Examination Facility, a glovebag operation and a Vent and Purge operation are currently on TRU Pad #6.

MTRU Waste Processing

The Modular Repackaging Facility, currently on Pad 19, is a hazard category II facility that sorts and segregates TRU waste contained in drums. It removes prohibited items and repackages waste to meet transportation limits for shipment to WIPP for disposal.

For large containers, a hazard category II type process will be implemented to address solids, liquids, sludges, and soil wastes contaminated with alpha-emitting transuranic radionuclides for disposal. This includes, at a minimum, repackaging, sorting, size reduction, and disposal at WIPP. This process uses equipment that has been demonstrated on similar activities and is in the process of being installed to support the facility's equipment needs.

Schedule

The schedules for the TRU waste containers and pads are found in Volume I, page 4-2.

4.2 MTRU Waste Streams Proposed for Shipment to WIPP

MTRU waste is divided into waste groupings based primarily on the containers that hold the waste. The amount of detailed information on the contents of each waste container is limited. The container type, generator, and radionuclide data provide information that allows the inventory of MTRU waste to be placed into waste groupings that support planning for future processing to meet the requirement of the WIPP WAC. This section discusses the waste streams that are proposed to be shipped to WIPP for disposal. Refer to Table 1.3, Chapter 1, of this volume for EPA Hazardous Waste Code Subcategories.

4.2.1 MTRU Waste Requiring Characterization/Certification for WIPP

This section describes MTRU waste streams, which require characterization and certification prior to acceptance for disposal at WIPP. The section is divided into two subsections for waste stream categories as follows:

4.2.1.1 Defense-Related TRU Job Control Waste Group

4.2.1.2 TRU Job Control Waste Group

4.2.1.1 Defense-Related TRU Job Control Waste Group

The PO for this waste group is to assay, sort, process, and characterize the waste material for drummed waste or processes to be developed for non-drummed waste in existing facilities (CAT II and CAT III), followed by preparation for shipment and disposal at WIPP.

Waste streams within this waste group include the following:

SR-W026, CH Mixed TRU /Thirds (Consolidated with SR-W027)

SR-W027, CH Mixed TRU

General Information

SR-W026, CH Mixed TRU /Thirds (combined with SR-W027)

SR-W027, CH Mixed TRU

This waste stream is a job control waste and is composed primarily of organic solids such as booties, lab coats, floor sweepings, rags, labware, solvent contaminated rags and other job control waste generated primarily through separation activities. A small percentage (< 20%) of this waste stream includes sludges, piping, resins, filters, and miscellaneous waste. The sludges are caustic and acidic evaporated residues that have been neutralized and absorbed. Also included in this stream are 25 specifically fabricated welded stainless steel containers that consist of waste dismantled from the H-Canyon hot sample aisle. After ISOCs Canberra data review and TRU subject matter expert consultation, the containers were identified as mixed TRU (hazardous for lead). The boxes contain lead shielding, sampler boxes, pipes, equipment and some plastics; while these are not "Thirds", they are CH mixed TRU.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Organic debris

Waste Codes

- D001C (Low TOC Ignitable)
- D003D (Water Reactive)
- D004 (TCLP As)
- D006A (TCLP Cd)
- D007 (TCLP Cr)
- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D011 (TCLP Ag)
- D018 (Benzene)
- D019 (Carbon tetrachloride)
- D022 (Chloroform)
- D023 (o-Cresol)
- D024 (m-Cresol)

- D025 (p-Cresol)
- D026 (Cresol)
- F001 (Spent halogenated degreasing solvents)
- F002 (Spent halogenated solvents)
- F003 (Spent nonhalogenated solvents)
- F005A (Spent nonhalogenated solvents)
- Non-wastewater
- P012 (Arsenic trioxide)
- P015 (Beryllium dust)
- P048 (2, 4-Dinitrophenol)
- P113 (Thallic oxide)
- P120 (Vanadium pentoxide)
- U002 (Acetone)
- U032 (Calcium chromate)
- U052 (Cresols-mixed)
- U080 (Methylene chloride)
- U133 (Hydrazine)
- U134 (Hydrogen fluoride)
- U144 (Lead acetate)
- U151C (Low Mercury)
- U154 (Methanol)
- U161 (Methyl isobutyl ketone)
- U209 (1, 1, 2, 2-Tetrachloroethane)
- U211 (Carbon tetrachloride)
- U220 (Toluene)
- U226 (1, 1, 1-Trichloroethane)
- U239 (Xylenes)

Land Disposal Restriction Treatment Standard

- Manage at WIPP.

The PO is to process this waste in the processing facilities such as the Modular TRU Waste Repackaging Facility to sort and segregate and other waste-handling technologies to characterize, repackage and certify waste to meet the TRUPACT shipping requirements for disposal at WIPP.

Processing will include removing non-compliant items found from the waste. This option is preferred because it has the lowest cost and has the lowest risk for delays due to permitting, technical barriers, and system implementability. It uses equipment that has been demonstrated on similar activities or the technology development is in progress to support the facilities equipment needs.

Waste Characterization

- Sampling and analysis are used to characterize the waste stream.
- Confidence level is medium based on the varying composition of the job waste and the exact contents of specific waste containers.

Radiological Characterization

- Total activity is >100 nCi/g.
- Beta/gamma emitters (H3, Co-60, and Cs-137) are present.
- Alpha emitters (Pu-238, Pu-239, Pu-240, Pu-241, Am-241, and Cm-244) are present.
- Waste is primarily CH (<200 mR/hr) with a small volume of RH.

4.2.1.2 TRU Job Control Waste Group

The PO for this waste group is to assay, process, and characterize the waste material in the Modular TRU Waste Repackaging System (CAT II) for drummed waste or processes to be developed in existing facilities (CAT II and CAT III), followed by preparation for waste shipment and disposal at WIPP.

Waste streams within this waste group include the following:

SR-W025, Solvent/TRU Job Control Waste <100 nCi/g

SR-W033, Thirds/TRU Job Control Waste <100 nCi/g

General Information

SR-W025, Solvent/TRU Job Control Waste <100 nCi/g

This waste stream is composed primarily of solids such as booties, lab coats, floor sweepings, rags, labware, and other job control waste generated primarily through separation activities for plutonium production. The waste stream includes small amounts of TRU waste from onsite laboratories.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Organic debris
- Inorganic debris

Waste Code

- D001C (Low TOC Ignitable)
- D003D (Water Reactive)
- D004 (TCLP As)
- D006A (TCLP Cd)
- D007 (TCLP Cr)
- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D011 (TCLP Ag)
- D018 (Benzene)
- D019 (Carbon tetrachloride)
- D022 (Chloroform)
- D023 (o-Cresol)
- D024 (m-Cresol)
- D025 (p-Cresol)
- D026 (Cresols-mixed)
- F001 (Spent halogenated degreasing solvents)
- F002 (Spent halogenated solvents)
- F003 (Spent non-halogenated solvents)
- F005A (Spent non-halogenated solvents)
- P012 (Arsenic trioxide)
- P048 (2, 4-Dinitrophenol)
- P113 (Thallic oxide)
- P120 (Vanadium pentoxide)
- U002 (Acetone)
- U032 (Calcium chromate)
- U052 (Creosols-mixed)
- U080 (Methylene chloride)

- U133 (Hydrazine)
- U134 (Hydrogen fluoride)
- U144 (Lead acetate)
- U151C (Low Mercury)
- U154 (Methanol)
- U161 (Methyl isobutyl ketone)
- U209 (1, 1, 2, 2-Tetrachloroethane)
- U211 (Carbon tetrachloride)
- U220 (Toluene)
- U226 (1, 1, 1-Trichloroethane)
- U239 (Xylenes)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- Manage at WIPP

The PO is to process the waste in SRS TRU facilities and send to WIPP as appropriate.

Waste Characterization

- Process knowledge was used to characterize the waste stream.
- Confidence level is medium based on the varying composition of the job control waste and the exact contents of specified waste containers.

Radiological Characterization

- Total activity is 10 – 100 nCi/g.
- Beta/gamma emitters (H3, Co60, and Cs137) are present.
- Alpha emitters (Pu238, Pu239, Pu240, Pu241, Pu242, Am241, and U233) are present.
- Waste is primarily CH (<200 mR/hr).
- Mixed LLW

SR-W033, Thirds/TRU Job Control Waste <100 nCi/g

This waste stream is composed primarily of solids such as booties, lab coats, floor sweepings, rags, labware, and other job control waste generated primarily through separation activities for plutonium production. The waste stream includes small amounts of TRU waste from onsite laboratories. Waste from SR-W025 differs from SR-W033 because solvent rags are suspected to be in the waste. A conservative interpretation of the mixture rule causes all contents of SR-W033 containers to be characterized with listed solvent waste codes due to the presence of the solvent rags.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Organic debris
- Inorganic debris

Waste Code

- D001C (Low TOC Ignitable)
- D003D (Water Reactive)
- D004 (TCLP As)
- D006A (TCLP Cd)
- D007 (TCLP Cr)
- D008A (TCLP Pb)
- D009A (TCLP Hg)

- D011 (TCLP Ag)
- D019 (Carbon tetrachloride)
- D022 (Chloroform)
- D023 (o-Cresol)
- D024 (m-Cresol)
- D025 (p-Cresol)
- D026 (Cresols)
- F001 (Spent halogenated degreasing solvents)
- F002 (Spent halogenated solvents)
- F003 (Spent non-halogenated solvents)
- F005A (Spent non-halogenated solvents)
- P012 (Arsenic trioxide)
- P048 (2, 4-Dinitrophenol)
- P113 (Thallic oxide)
- P120 (Vanadium pentoxide)
- U002 (Acetone)
- U032 (Calcium chromate)
- U052 (Creosols-mixed)
- U080 (Methylene chloride)
- U133 (Hydrazine)
- U134 (Hydrogen fluoride)
- U144 (Lead acetate)
- U151C (Low Mercury)
- U154 (Methanol)
- U161 (Methyl isobutyl ketone)
- U209 (1, 1, 2, 2-Tetrachloroethane)
- U211 (Carbon tetrachloride)
- U220 (Toluene)
- U226 (1, 1, 1-Trichloroethane)
- U239 (Xylenes)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- Manage at WIPP

The PO is to process the waste in SRS TRU facilities and send to WIPP as appropriate.

Waste Characterization

- Process knowledge was used to characterize the waste stream.
- Confidence level is medium based on the varying composition of the job control waste and the exact contents of specified waste containers.

Radiological Characterization

- Total activity is 10 – 100 nCi/g.
- Beta/gamma emitters (H3, Co60, and Cs137) are present.
- Alpha emitters (Pu238, Pu239, Pu240, Pu241, Am241, and Cm244) are present.
- Waste is primarily CH (<200 mR/h).
- Mixed LLW

4.2.1.3 Other MTRU Waste Streams for Shipment to WIPP

The PO for this waste group is to characterize the waste material followed by preparation for shipment and disposal.

Waste streams within this waste group include the following:

SR-W006, CH Mixed TRU/Liquids

SR-W009, Silver Coated Packing Material

SR-W053, Rocky Flats Ash

SR-W089, CH Mixed TRU from Mound for Shipment to WIPP

SR-W092, CH Mixed TRU from Battelle Site for Shipment to WIPP

General Information

SR-W006, CH Mixed TRU/Liquids

This waste stream is defense-related MTRU waste, consisting of a liquid waste generated from plutonium extraction analytical procedures at the SRNL. It consists of a homogeneous, xylene-based, liquid-chelating agent. This is a small volume waste stream and is currently stored in compliance with RCRA in a satellite accumulation area at SRNL.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Organic liquid

Waste Code

- D001A (Ignitable-High TOC)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- Manage at the WIPP

Waste Characterization

- Sampling and analysis are used to characterize the waste stream.
- Confidence level is high based upon knowledge of the chemicals used in the analytical procedures.

Radiological Characterization

- Total activity is >100 nCi/g.
- Alpha emitters (Pu238, Pu239, Pu240, Pu241, Pu242, and Am241) are present.
- Waste is CH (<200 mR/hr).

SR-W009, Silver Coated Packing Material

This material is ceramic packing material coated with silver nitrate (silver-coated Berl saddles) that is used in the offgas systems in the F-Canyon and H-Canyon dissolver operations to bond radioactive iodine129 and iodine131 emissions to the packing material as silver iodide. Spent packing material is changed out from the process when pluggage occurs or when the iodine level measured at the stack elevates such that levels start to approach the emission limit. Material is too small to meet the 60-mm minimum particle size standard for debris.

A treatability variance was submitted for this stream in 1997. This waste has recently been reclassified as TRU. The treatability variance will be left in place until such time as this waste stream can be assayed at Oak Ridge, TN as CH TRU or RH TRU. The silver-coated packing material will require additional radiological characterization. The material will be repackaged after the assays are complete and prior to shipment to WIPP.

Volume

- Volume data for this waste stream can be found in Chapter 11. The volume in Chapter 11 is reported as net volume. However, volume figures may be converted to gross in future annual updates once treatment is performed.

Waste Stream Composition

- Uncategorized inorganic particulate

Waste Code

- D011 (TCLP Ag)
- D009A (TCLP Hg)
- D008C (Radioactive lead solids subcategory)
- Non-wastewater

Land Disposal Restriction Treatment Standard

- D008 = specified technology = Macroencapsulation
- D009 = concentration-based standard = 0.025 mg/L TCLP
- D011 = concentration-based standard = 0.14 mg/L TCLP
- D001 through D043 non-wastewaters to be land disposed must be treated to meet UTS for any UHC that may be present.

Waste Characterization

- No analysis was performed due to as low as reasonably achievable (ALARA) concerns, but silver value was calculated.
- Process knowledge is used to characterize waste stream.
- Confidence level for silver concentration is high due to manufacturer specifications of silver content on the saddles. Confidence level for mercury concentration is low; presence is suspected, but not proven.
- Lead is included due to shielding in 55-gallon drums of F-Canyon waste.

Radiological Characterization

- Beta/gamma emitters are present.
- Volatile radionuclides I-129 and I-131 (I-131 is a short-lived isotope) are present.
- Typical rad levels include I-129 = 62.2 nCi/g Cs-137 = 3,080 nCi/g
- Alpha emitters (U-235, U-236, U-238, Pu-239, and Pu-240) are present.
- Waste is RH.
- Mixed TRU waste

SR-W053, Rocky Flats Ash

This waste consists of a small volume of ash sent from Rocky Flats to SRS for research into plutonium recovery. Courts in the State of Colorado declared Rocky Flats' ash hazardous based on chemical analysis of F-listed solvent waste processed in the Rocky Flats incinerator. Upon learning of the Colorado court action, SRS placed the ash in a RCRA satellite accumulation area. SRS recently completed a treatability study with this material at SRNL.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Matrix

- Inorganic sludge/particulate

Waste Codes

- D004 (TCLP As)
- D005 (TCLP Ba)
- D006A (TCLP Cd)
- D007 (TCLP Cr)

- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D010 (TCLP Se)
- D011 (TCLP Ag)
- F001 (Spent halogenated degreasing solvents)
- F002 (Spent halogenated solvents)
- F005A (Spent nonhalogenated solvents)

Land Disposal Restriction Treatment Standard

- Manage at the WIPP

Waste Characterization

- Process knowledge is used to characterize the waste stream.
- Confidence level is low. No analytical data is available, and the material is from another DOE site.
- This ash was declared mixed waste after SRS had the material in a vault and was handling the waste as a Special Nuclear Material (SNM).

Radiological Characterization

- Transuranic–alpha emitters (Am-241, Pu-238, Pu-239, Pu-240, Pu-241, and Pu-242) are present.
- Waste is CH (<200 mR/hr).

SR-W089, CH Mixed TRU from Mound for Shipment to WIPP

This waste stream is a defense-related job control and D&D waste and is composed of organic solids such as booties, lab coats, floor sweepings, rags, labware, soils, and other job control waste along with gloveboxes, fume hoods, and general D&D debris. A small percentage (<5%) of this waste stream includes sludges, resins, filters, and miscellaneous waste. The sludges will be neutralized and solidified.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Organic debris

Waste Code

- D001C (Low TOC Ignitable)
- D004 (TCLP As)
- D006A (TCLP Cd)
- D007 (TCLP Cr)
- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D011 (TCLP Ag)
- Non-wastewater
- Manage at the WIPP.

The PO is to process the waste to sort and segregate and use other waste-handling technologies to size-reduce, characterize, repackage, and certify the waste to meet TRUPACT shipping requirements for disposal at WIPP.

Processing will include removing non-compliant items found from the waste. Treatment will remove, reduce, or destroy to meet LDR requirements to comply with the WIPP RCRA Part B permit. This option is preferred because it has the lowest cost and has the lowest risk for delays due to permitting, technical barriers, and system implementability. It uses equipment that has been demonstrated on similar activities or the technology development is in progress to support the facilities equipment needs.

Waste Characterization

- Sampling and analysis will be used to characterize the waste stream (NDE, NDA, and headspace sampling).
- Confidence level for the legacy waste is medium based on historical knowledge and the implementation of the Real Time Radiography.
- Confidence level for the D&D waste is high based on the implementation of the Mound TRU Certification process and oversight by SRS personnel.

Radiological Characterization

- Total activity is >100 nCi/g.
- Beta/gamma emitters (H3, Co-60, and Cs-137) are present.
- Alpha emitters (Pu-238, Pu-239, Pu-240, Pu-241, Am-241, and Cm-244) are present.
- Waste is exclusively CH (<200 mR/hr).

SR-W092, CH and RH Mixed TRU from Battelle Site for Shipment to WIPP

The CH-TRU and RH-TRU waste was generated from D&D of the Battelle JN-1 Plutonium Facility in Columbus, Ohio between 1978 and 1982. This waste stream is a defense-related job control and D&D waste and is composed of heterogeneous debris (Waste Matrix Code S5490) which consists of a variable combination of organic & inorganic compositions. Waste items include rubber gloves, hoses, paper, combustible trash, wood, plastic bags, plastic containers, crushed metal cans, aerosol cans, scrap metal, tubing, piping, paint chips, filters, filter housings, hand tools, nuts, bolts, nails, plexiglass, glass jars, glass, crucibles, solidified liquids, soil, or dirt, equipment such as vacuum cleaners.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Organic debris

Waste Code

- D005 (TCLP Ba)
- D007 (TCLP Cr)
- D008 (TCLP Pb)
- D009 (TCLP Hg)
- D011 (TCLP Ag)
- F001 (Spent halogenated degreasing solvents)
- F002 (Spent halogenated solvents)
- F003 (Spent non-halogenated solvents)
- F005 (Spent non-halogenated solvents)
- Manage at WIPP.

Battelle Laboratories shipped the CH-TRU waste in 6 SWBs, transported to SRS in TRUPAC 2 containers. At SRS, the SWBs were off loaded and stored on E-area TRU Pads for future shipment to WIPP. The RH-TRU was contained in DOT 7A Type 55-gallon drums, total of 117 drums and drum liners. RH-TRU was shipped to SRS in a 10-160B and 72B shielded casks. All CH-TRU and RH-TRU processed by Battelle followed the waste program objectives of the DOE WIPP Waste Characterization Program for CH TRU as provided for in WIPP Hazardous Waste Permit, Attachment B, Waste Analysis Plan (WIPP-WAP). Waste matrix codes are identified in the WIPP Transportation and Packaging (TRAMPAC) document for shipping to WIPP.

SRS has prepared Acceptable Knowledge (AK) documents for WIPP approval of the Battelle waste. Certification of the final characterization of the Battelle waste will be provided by the Central Characterization Program at SRS. SRS shipped 83 of the 108 Battelle Columbus RH drums to the WIPP Facility during 2009. Shipment of the 25 remaining drums was completed in July 2011. The completion of this activity was delayed due to difficulties in obtaining the AK Report approval from the State of New Mexico.

Waste Characterization

- Sampling and analysis will be used to characterize the waste stream (NDE, NDA, and headspace sampling).
- Confidence level for the legacy waste is medium based on historical knowledge and the implementation of the Real Time Radiography.
- Confidence level for the Battelle waste is high based on the implementation of the Battelle TRU Characterization program in compliance with WIPP WAC for CH-TRU and RH-TRU program. SRS will provide oversight to ensure waste certification & waste characterization documentation are adequate.

Radiological Characterization

- Total activity is >100 nCi/g.
 - Beta/gamma emitters (H3, Co-60, and Cs-137) are present.
 - Alpha emitters (Pu-238, Pu-239, Pu-240, Pu-241, Am-241, and Cm-244) are present.
 - Waste is exclusively CH (<200 mR/hr).
- RH TRU waste is > 200 mR/hr).

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CHAPTER 5. HIGH-LEVEL RADIOACTIVE WASTE (HLW)

The following waste streams are in the mixed HLW category. This chapter discusses the radioactive liquid waste streams and the available treatment. Refer to Table 1.1, Chapter 1, Volume I of the STP for the user's guide. The user's guide identifies each mixed waste stream, the PO, and the section in which the waste stream is discussed in Volumes I and II of the STP. Also refer to Table 1.3, Chapter 1, Volume II for EPA Hazardous Waste Code Subcategories.

Mixed High-Level Waste Group for Vitrification

Vitrification in the DWPF for high level liquid waste portions, and solidification in the Saltstone Production Facilities for the low level liquid portions, are the PO for certain mixed waste streams, including, but not limited to, the following:

SR-W016, 221-F Canyon High-Level Radioactive Liquid Waste / Low-Level Radioactive Liquid Waste

SR-W017, H-Canyon High-Level Radioactive Liquid Waste / Low-Level Radioactive Liquid Waste

General Information

SR-W016, 221-F Canyon High-Level Radioactive Liquid Waste / Low-Level Radioactive Liquid Waste

This waste is an aqueous liquid containing fission products generated from deactivation of the 221-F Canyon facility. The extraction of plutonium from reactor target assemblies and dissolution of spent fuel rods was suspended in FY02. The last transfer of material from F-Canyon to the F-Area Tank Farm occurred on August 26, 2005.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Aqueous liquid

Waste Code

- D002A (corrosive waste managed as wastewater)
- D005 (TCLP Ba)
- D007 (TCLP Cr)
- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D011 (TCLP Ag)
- Non-wastewater slurry

Land Disposal Restriction Treatment Standard

- All waste codes = specified technology = HLVIT

Waste Characterization

- Sampling and analysis are used to characterize the waste stream.
- Confidence level is high based on availability of analysis, with the exceptions of TCLP.

Radiological Characterization

- Total activity for radiological characterization is ~7.1 Ci/gal.
- Alpha emitters (U^{235} , U^{238} , Pu^{238} , Pu^{239} , Pu^{240} , Pu^{241} , Am^{241} , Cm^{241} , and others) are present.
- Beta/gamma emitters (Sr^{90} , Ru^{106} , Zr^{95} , Nb^{95} , Rh^{106} , Cs^{137} , Ce^{144} , Pr^{144} , Pm^{147} , H^3 , and others) are present.
- Waste is RH.
- High-level radioactive waste

SR-W017, H-Canyon High-Level Radioactive Liquid Waste / Low-Level Radioactive Liquid Waste

This waste stream is an aqueous liquid containing mixed fission products from the H-Canyon facility in support of the modified PUREX process. The stream also contains decontamination solution from maintenance activities in the H-Area Tank Farm. H-Canyon waste materials are generated from the processing of nuclear materials. This Waste stream includes sample returns to H-Canyon from SRNL.

Volume

- Volume data for this waste stream can be found in Chapter 11.

Waste Stream Composition

- Aqueous liquid

Waste Code

- D002A (corrosive waste managed as wastewater)
- D005 (TCLP Ba)
- D007 (TCLP Cr)
- D008A (TCLP Pb)
- D009A (TCLP Hg)
- D011 (TCLP Ag)
- Non-wastewater slurry

Land Disposal Restriction Treatment Standard

- All waste codes = specified technology = HLVIT

Waste Characterization

- Sampling and analysis are used to characterize the waste stream.
- Confidence level is high based on availability of analysis, with the exceptions of TCLP.

Radiological Characterization

- Total activity for radiological characterization is ~9.7 Ci/gal.
- Alpha emitters (U^{235} , U^{238} , Pu^{238} , Pu^{239} , Pu^{240} , Pu^{241} , Am^{241} , and Cm^{241}) are present.
- Beta/gamma emitters (Sr^{90} , Ru^{106} , Zr^{95} , Nb^{95} , Rh^{106} , Cs^{137} , Ce^{144} , Pr^{144} , Pm^{147} , and H^3) are present.
- Waste is RH.
- High-level radioactive waste

The following information applies to all the waste streams in this waste group.

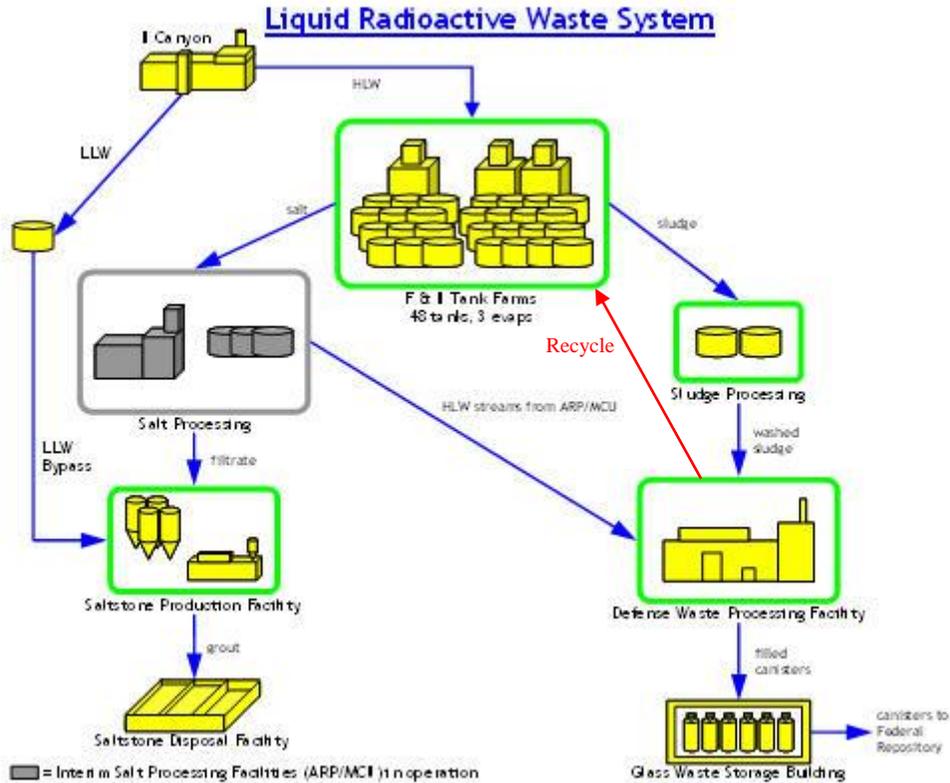
Technology and Capacity Needs

Vitrification is the specified technology for all of the waste codes denoting SRS high-level radioactive wastes. These wastes primarily are generated from the extraction of plutonium and the recovery of enriched uranium. DWPF has been designed with capacity to treat the identified existing and future liquid high-level radioactive waste streams at SRS.

The radioactive liquid waste tanks in F Area and H Area currently store (as listed in Table 11.2) salt solution, saltcake or precipitate, and sludge generated mostly from the dissolution of target assemblies irradiated in the SRS reactors. It is expected that an additional volume of liquid waste from H-Canyon will be generated at SRS until the early 2020 time frame. The treatment schedule prioritizes the removal of waste from tanks that are at most risk. These are the single-walled tanks, and tanks that have only a partial secondary containment structure.

Treatment Option Information

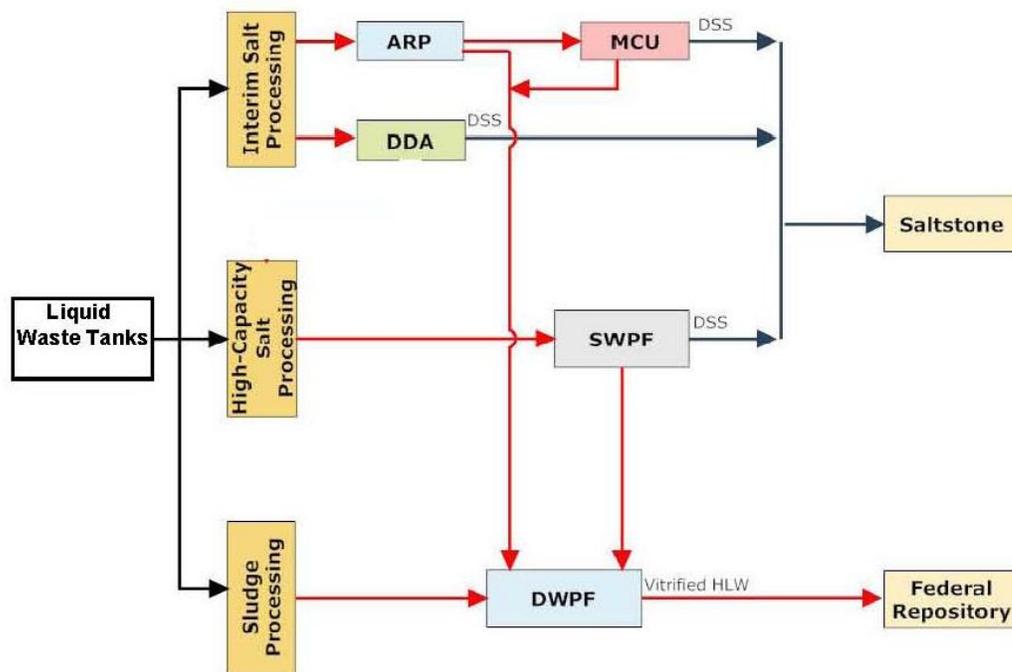
A general diagram of the radioactive liquid waste treatment process at SRS is shown below.



The F- and H-Area Tank Farms contain waste tanks and evaporator systems to manage and treat the liquid radioactive wastewaters generated by SRS operations. These units function to receive fresh wastes, allow integrated processing of stored waste, provide preliminary clarification by gravity settling, and concentrate dissolved salts by evaporation. The low activity aqueous portion (overheads from the evaporator systems) is transferred to ETP for treatment prior to discharge to Upper Three Runs or is returned to the Tank Farm for further processing.

H-Area Tank Farm contains process units to treat the accumulated sludges and salts. The sludge processing operation is designed to prepare the sludges for transfer to the DWPF Vitrification Facility for further treatment. H-Area Tank Farm also directly receives a LLW stream (SR-W077) from the H-Canyon Facility, which is acceptable for onsite disposal. It is sent to the Saltstone Facilities and is solidified in vaults in Z Area.

The processing flow plan for treatment of the waste is shown below.



Legend: DDA: Deliquification, Dissolution & Adjustment Process; MCU: Modular CSSX Unit; ARP: Actinide Removal Process; SWPF: Salt Waste Processing Facility; DWPF: Defense Waste Processing Facility; DSS: Decontaminated Salt Solution; LLW: Low Level Waste; HLW: High Level Waste; Red Lines = HLW; Blue Lines = LLW.

Salt processing of a limited amount of the waste originating in Tank 41H using the deliquification, dissolution and adjustment (DDA) process was completed in 2011 and notifications of completion by letter dated May 13, 2011, was provided to the South Carolina Department of Health and Environmental Control. The decontaminated salt solution (DSS) stream resulting from this processing was sent to the Saltstone Facilities and solidified and disposed of in the Saltstone Disposal Facility. Other Interim Salt Processing facilities, i.e., the Actinide Removal Process (ARP) and the Modular Caustic Side Solvent Extraction Unit (MCU), continue to be operational. DSS from ARP/MCU is being sent to the Saltstone Facilities and will be solidified in vaults in Z Area. The high curie cesium-laden strip effluent stream and HLW solids are being sent to DWPF. The high-capacity Salt Waste Processing Facility (SWPF) is under construction.

Vitrification has been identified by EPA as the specified technology for treatment of high-level radioactive waste. Borosilicate glass has been determined to be the best stabilization matrix.

TCLP tests of simulated HLW were done on both expected metal levels of wastes to be processed in DWPF and at three times the level of metals expected. These tests indicated that the waste form produced at DWPF will be below the hazardous waste characteristic limits for toxicity (reference WSRC-IM-91-116-13, Revision 0, and WSRC-TR-94-025, Revision 0).

Facility Status

The DWPF, Actinide Removal Process/Modular Caustic-Side Solvent Extraction Unit, and Saltstone Facilities are all operational. DWPF is currently in coupled operation receiving both sludge and salt wastes. The high-capacity Salt Waste Processing Facility is under construction as are additional saltstone disposal units.

Regulatory Status

These Liquid Waste facilities are operated under a series of industrial wastewater treatment facility construction and operating permits and a Part 70 (Title V) Air Quality Permit. Saltstone disposal is accomplished in accordance with a Class 3 landfill permit.

Treatment Option Status and Uncertainties

As of commencement of operations, DWPF continues to vitrify high-level radioactive waste. The waste is then poured into stainless steel canisters, which are placed in interim storage at SRS awaiting final disposition.

Budget Status

Progress toward the ultimate goal of immobilizing all the HLW at SRS is highly dependent on available funding. With a reduction in funding, activities that ensure safe storage of waste claim first priority. Funding above that required for safe storage enables risk reduction activities, i.e., waste removal, treatment, (sludge and salt processing) - including immobilization - and tank closure to continue.

DOE shall use its best efforts, in accordance with the DOE Federal appropriations process, to request timely funding to meet its obligations under this Site Treatment Plan ("Plan"), including requests that support regulatory commitments as defined in Appendix L of the Savannah River Site Federal Facility Agreement, Statement of Resolution of Dispute Concerning Extension of Closure Dates for Savannah River Site High-Level Radioactive Waste Tanks 19 and 18.

This *Plan* assumes full funding of the estimated costs to accomplish the required project and operations activities.

Uncertainty Issues

Currently, both processing and storage space within the liquid radioactive waste storage tanks is critically short. To maintain the ability to prepare sludge for continued Defense Waste Processing Facility operations, and to provide the necessary tank space for salt waste preparation and treatment, several tank space initiatives are being undertaken. Included among these initiatives are the ongoing Actinide Removal Process / Modular Caustic Side Solvent Extraction Unit (ARP/MCU) processes and operations. In addition, development of the next generation solvent for use at the Salt Waste Processing Facility and completion of the Small Column Ion Exchange project to provide additional salt processing capability are under consideration by DOE. These initiatives along with completion of construction of the Salt Waste Processing Facility are needed to minimize impacts to DOE's programmatic objectives.

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CHAPTER 6. FUTURE GENERATION OF MIXED WASTE STREAMS

This chapter addresses waste streams generated by SGCP and D&D for which specific waste characterization data is needed before an in-depth options analysis can be performed. The section explains the types of waste to be generated in future activities at SRS.

6.1 Soil and Groundwater Closures Waste

The SRS SGCP Mission is to remediate inactive waste sites. SRS has implemented a comprehensive environmental program to maintain compliance with environmental regulations and to mitigate impacts to the environment. SGCP activities at SRS are governed by the FFA. The FFA is a tri-party agreement among the U.S. Department of Energy (DOE), EPA, and SCDHEC, which became effective on August 16, 1993. The FFA requires that SRS set work priorities on an annual basis with schedules and deadlines for environmental restoration actions. SRS must also submit to EPA and SCDHEC long-term projections including projected deliverable dates for work activities to be conducted over the next two fiscal years and ROD dates for the third fiscal year and beyond.

Other SGCP activities are defined by RCRA permits, closure plans, groundwater corrective action requirements, settlement agreements, and consent decrees. Known mixed wastes for which a cleanup decision is scheduled within the next five years and for which treatment in accordance with the RCRA LDRs may be required are discussed for general planning purposes. Due to the uncertainty of how these environmental restoration wastes ultimately will be managed, their inclusion into the STP (and therefore the specification of how and when they will be treated) will not occur until a final cleanup decision (under CERCLA or RCRA) has been reached.

If SGCP mixed waste is removed from an area of contamination and is not otherwise subject to a RCRA/CERCLA order or agreement or specifically excluded from the STP, the following actions will be taken to include these waste streams in the STP: 1) review characterization data and obtain more information if necessary to proceed with the PO selection process; 2) determine if the new waste would fit into any existing waste stream category by reviewing the waste opposite the characterization information and the PO for the existing waste stream; 3) if able to fit into an existing waste stream, modify the MWIR and the STP at the next annual update of the MWIR and STP and proceed with treatment on the same schedule as has been identified for the existing waste stream; 4) if unable to fit this new waste stream into an existing waste category, create a new waste stream and notify SCDHEC within 30 days of discovery as required in the Consent Order, 95-22-HW; 5) identify a PO (using the same or similar process as was used to develop other POs) and schedule within one year of the notification date.

6.2 Deactivation and Demolition Waste

At the end of a facility's lifecycle when it or its mission is no longer needed by DOE, the facility undergoes a process referred to as "disposition." This is a series of stages where the facility is brought from its condition and status at the time operations end to a final end state that involves either decommissioning or conversion for another use. As additional specific projects are funded, walkdowns and initial characterization will be done to generate the best estimated volume and nature of wastes that could be generated. Consequently, D&D waste will be generated as a result of the following: surveillance and maintenance activities, hazard mitigation activities, deactivation activities, and decommissioning activities. Efforts are currently underway to decommission facilities in A, B, C, E, F, G, H, K, L, N, P, and R Areas. It is possible that a new mixed waste stream will be identified in this project. If so, SRS will follow the requirements of new mixed waste generation found in Consent Order 95-22-HW.

6.3 Additional Waste Streams

Other Mixed Waste Generated at SRS

A verbal agreement has been reached with SCDHEC and SRS that waste in satellite accumulation areas that is treated in a 90-day staging area or by elementary neutralization will not be included in the STP or the MWIR. Exceptions to this agreement are if the waste is continually generated and treated (e.g., SR-W050 supporting ITP process sampling activity) or if the waste is a large quantity (e.g., SR-W072 debris treatment by HLW Operations). These cases are evaluated on a case-by-case basis.

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CHAPTER 7. RESERVED

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**CHAPTER 8. DISPOSAL IN SUPPORT OF THE STP DISCUSSIONS
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**CHAPTER 9. TREATMENT FACILITIES AND TREATMENT
TECHNOLOGIES
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**CHAPTER 10. OFFSITE WASTE STREAMS FOR WHICH SRS IS THE
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THE STP**

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CHAPTER 11. VOLUME SUMMARY INFORMATION

This chapter includes volume and treatment residue summaries of legacy wastes for the waste streams listed in the STP. Table 11.1 lists the volume summary of each waste stream by its unique waste stream number. Table 11.2 lists the volume summary for each waste stream by treatment facility. Volume summaries include inventories as of July 1, 2011. Table 11.3 shows the volume and status of mixed treatment residues for those waste streams that have been treated and the residues must continue to be managed as a mixed waste.

Waste Stream No.	Waste Stream Name	Preferred Option (PO)	Current Cumulative Inventory through 07/01/11 (m³)
SR-W001	Rad-Contaminated Solvents	Combustion at commercial facility	0.0
SR-W002	Rad-Contaminated Chlorofluorocarbons	Consolidated with SR-W001	N/A
SR-W003	Solvent Contaminated Debris (LLW)	Thermal Treatment, macroencapsulation, or stabilization and/or alternative debris treatment at commercial vendor facility. Consolidated with SR-W062	N/A
SR-W004	M-Area Plating Line Sludge from Supernate Treatment	Consolidated with SR-W037	N/A
SR-W005	Mark 15 Filtercake	Stabilization by Vitrification – M-Area Vendor Treatment Facility	0.0
SR-W006	CH Mixed TRU/Liquids	Characterization at SRS–WIPP Disposal	0.01
SR-W007	SRNL Sample Material	Waste stream eliminated	N/A
SR-W008	Separations Area Sample Receipts from SRNL	Consolidated with SR-W017	N/A
SR-W009	Silver-Coated Packing Material	Characterization at SRS–WIPP Disposal	6.9
SR-W010	Scintillation Solution	Consolidated with SR-W001	N/A
SR-W011	Cadmium-Coated High Efficiency Particulate Air (HEPA) Filters	Scrap Metal Exclusion	0.0
SR-W012	Toxic Characteristic Solids	Thermal Treatment, Macroencapsulation, or stabilization and/or alternative debris treatment at commercial facility. Consolidated with SR-W062 & W088	N/A
SR-W013	Low-Level Waste (LLW) Lead-to be Decontaminated Onsite	Reclassified as material in use Waste Stream Eliminated	N/A
SR-W014	Elemental (Liquid) Mercury - Sitewide	Amalgamation–Offsite Commercial Vendor	0.0

Table 11.1 Volume Summary by Waste Stream Number			
Waste Stream No.	Waste Stream Name	Preferred Option (PO)	Current Cumulative Inventory through 07/01/11 (m³)
SR-W015	Tritium-Contaminated Equipment	Macroencapsulation in S. S. Container as 90-Day Generator	40.9
SR-W016	221-F Canyon High-Level Radioactive Liquid Waste / Low-Level Radioactive Liquid Waste	Vitrification at DWPF / solidification in Saltstone Facilities	55,720
SR-W017	H Canyon High-Level Radioactive Liquid Waste / Low-Level Radioactive Liquid Waste	Vitrification at DWPF / solidification in Saltstone Facilities	88,372
SR-W018	Listed Incinerable Solids	Combustion at commercial facility or macroencapsulation or stabilization at commercial facility	0.0
SR-W019	244-H RBOF High Activity Liquid Waste	Consolidated with SR-W017	N/A
SR-W020	Salt Processing Filters	Future Generation – Treatment to be Determined	0.0
SR-W021	Poisoned Catalyst Material	Waste stream eliminated	N/A
SR-W022	DWPF Benzene	Waste stream eliminated	N/A
SR-W023	Cadmium Safety/Control Rods	Macroencapsulation in a cask as a 90-day generator	3.4
SR-W024	Mercury/Tritium Gold Traps	Meets LDR Treatment Standard	3.0
SR-W025	Solvent /TRU Job Control Waste <100 nCi/g	Consolidated with SR-W091	N/A
SR-W026	CH Mixed TRU/Thirds	Consolidated with SR-W027	N/A
SR-W027	CH Mixed TRU	Characterization at SRS–WIPP Disposal	2,096
SR-W028	Mark 15 Filter Paper	Combustion at commercial facility or macroencapsulation or stabilization at commercial facility	0.0
SR-W029	M-Area Sludge Treatability Samples	Waste Stream Treated	0.0
SR-W030	Spent Methanol Solution	Consolidated with SR-W001	N/A
SR-W031	Uranium/Chromium Solution	Stabilization by Vitrification M-Area Vendor Treatment Facility	0.0
SR-W032A	Mercury Contaminated Heavy Water	Waste Stream Eliminated	N/A
SR-W032B	Mercury-Contaminated Heavy Water Residues	Solidification in container as a 90-day generator	0.0

Table 11.1 Volume Summary by Waste Stream Number

Waste Stream No.	Waste Stream Name	Preferred Option (PO)	Current Cumulative Inventory through 07/01/11 (m³)
SR-W033	Thirds/TRU Job Control Waste <100 nCi/g	Consolidated with SR-W091*	N/A
SR-W034	Calcium Metal	Consolidated with SR-W081	N/A
SR-W035	Mixed Waste Oil–Sitewide	Consolidated with SR-W001	N/A
SR-W036	Tritiated Oil with Mercury	Treatment by aging followed by Combustion	7.06
SR-W037	M-Area Plating Line Sludges	Stabilization by Vitrification M-Area Vendor Treatment Facility	0.0
SR-W038	Plating Line Sump Material	Stabilization by Vitrification M-Area Vendor Treatment Facility	0.0
SR-W039	Nickel Plating Line Solution	Stabilization by Vitrification M-Area Vendor Treatment Facility	0.0
SR-W040	Listed Stabilized Sludge/Listed LDR-Compliant Debris	Waste Stream Treated in Compliance with LDR	0.0
SR-W041	Aqueous Mercury and Lead	Effluent Treatment Project	0.0
SR-W042	Paints and Thinners	Thermal Treatment, macroencapsulation, or stabilization at commercial facility. Consolidated with SR-W001	N/A
SR-W043	Lab Waste w/Tetraphenyl Borate	Consolidated with SR-W012	N/A
SR-W044	Tri-Butyl-Phosphate & n-Paraffin – TRU	Consolidated with SR-W045	N/A
SR-W045A	PUREX Aqueous Waste	Waste stream eliminated	N/A
SR-W045	PUREX Organic Waste	Offsite Vendor for Treatment	0.7
SR-W046	Consolidated Incineration Facility Ash	Waste stream eliminated	N/A
SR-W047	Consolidated Incineration Facility Blowdown	Waste stream eliminated	N/A
SR-W048	Soils from Spill Remediation	Stabilization by Commercial Vendor	0.0
SR-W049	Tank E-3-1 Clean Out Material	Waste stream eliminated	N/A
SR-W050	Waste to Support High-Level Waste (HLW) Processing Demonstrations	Treatment by SRNL as a 90-Day Generator	0.6

Table 11.1 Volume Summary by Waste Stream Number			
Waste Stream No.	Waste Stream Name	Preferred Option (PO)	Current Cumulative Inventory through 07/01/11 (m³)
SR-W051	Spent Filter Cartridges and Carbon Filter Media	Thermal Treatment, macroencapsulation, or stabilization and/or alternative debris treatment at commercial facility. Consolidated with SR-W062.	N/A
SR-W052	Cadmium-Contaminated Glovebox Section	Waste stream eliminated	N/A
SR-W053	Rocky Flats Ash	Characterization at SRS—Ship to WIPP	0.0
SR-W054	Enriched Uranium Contaminated with Lead	Consolidated with SR-W037	N/A
SR-W055	Job Control Waste Containing Solvent Contaminated Wipes	Thermal Treatment or macroencapsulation, stabilization at commercial facility	0.0
SR-W056	Job Control Waste with Enriched Uranium and Solvent-Contaminated Wipes	Waste stream re-characterized. Waste Stream Eliminated.	N/A
SR-W057	D-Tested Neutron Generators	Waste stream eliminated	N/A
SR-W058	Mixed Sludge Waste with Mercury from DWPF Treatability Studies	Treatment by SRNL as a 90-Day Generator. Consolidated with SR-W050.	N/A
SR-W059	Tetrabutyl Titanate (TBT)	Consolidated with SR-W001	N/A
SR-W060	Tritiated Water with Mercury	Macroencapsulation in a Steel Container via a Treatability Variance	0.0
SR-W061	DWPF Mercury	Consolidated with SR-W068	N/A
SR-W062	Normal Low-Level Contaminated Debris	Macroencapsulation or stabilization by a Commercial Vendor and/or alternative debris treatment at an Offsite Facility	2.8
SR-W063	Macroencapsulated Low-Level Waste	Meets Treatment Standard. Consolidated with SR-W040.	N/A
SR-W064	IDW and Remediation Soils/Sludges/Slurries	Awaiting ROD, etc. Consolidated with SR-W088.	N/A
SR-W065	IDW Monitoring Well Purge/Development Water	Awaiting ROD, etc. Consolidated with SR-W071 and W077.	N/A

Table 11.1 Volume Summary by Waste Stream Number

Waste Stream No.	Waste Stream Name	Preferred Option (PO)	Current Cumulative Inventory through 07/01/11 (m³)
SR-W066	IDW and Remediation Debris (Parts)	Awaiting ROD, etc. Consolidated with SR-W062.	N/A
SR-W067	IDW and Remediation Personal Protective Equipment (PPE) Waste	Awaiting ROD, etc. Consolidated with SR-W062.	N/A
SR-W068	Elemental (Liquid) Mercury–Sitewide	Consolidated with SR-W014*	N/A
SR-W069	Low-Level Waste (LLW) Lead–to be Macroencapsulated Offsite	Macroencapsulation by a vendor at an offsite facility	3.0
SR-W070	Mixed Waste from Laboratory Samples	Combustion, macroencapsulation or stabilization at vendor facility. Consolidated with SR-W071 or W077 and organic with SR-W001.	N/A
SR-W071	Wastewater Suitable for thermal treatment or stabilization	Thermal treatment or stabilization at commercial vendor facility	0.0
SR-W072	Supernate or Sludge Contaminated Debris from High-Level Waste (HLW) Operations	Extraction or Immobilization Alternative Debris Technologies as a 90-day Generator	0.0
SR-W073	Cadmium-Containing Raschig Rings	Macroencapsulation by vendor offsite via treatability variance or stabilization at vendor facility	0.0
SR-W077	Aqueous Characteristic Wastewater	Ion exchange, filtration, and/or stabilization at F/H ETP, Saltstone, or commercial vendor	0.0
SR-W078	LDR Hazardous Waste Awaiting Radiological Screening	Waste Stream Eliminated	N/A
SR-W079	Polychlorinated Biphenyl (PCB) Mixed Waste	Combustion at the ETP TSCA Incinerator or Vendor Alternate Debris Technology Treatment	0.0
SR-W080 (CN-W001, CN-W004)	Charleston Naval Shipyard Waste	Waste Stream Eliminated	N/A
SR-W081	Reactive and Ignitable Mixed Waste	Deactivation followed by thermal treatment or stabilization or combustion at commercial vendor	0.0
SR-W082	Radioactive Chemicals, Metals, and Pesticides (CMP) Soil	Stabilization by Commercial Vendor	0.0

Table 11.1 Volume Summary by Waste Stream Number			
Waste Stream No.	Waste Stream Name	Preferred Option (PO)	Current Cumulative Inventory through 07/01/11 (m³)
SR-W083	Mercury- and Chromium-Contaminated Residues	Waste Stream eliminated	N/A
SR-W084	Remediation Waste Soils that Meet LDR	Consolidated with SR-W040	N/A
SR-W085	Rocky Flats Plutonium Fluoride Residues	Ship to WIPP, from Rocky Flats-Stream Eliminated	N/A
SR-W086	Characteristically Hazardous Non-Incinerable Solids	Amalgamation at Commercial Vendor	0.0
SR-W087 (BT-W035, part of BT-W003)	Bettis Atomic Power Laboratory Contaminated Oil	Thermal Treatment, or macroencapsulation or stabilization at commercial facility	0.0
SR-W088	Sludges and Non-Debris Solids*	Stabilization by commercial vendor	0.0
SR-W089	TRU Mixed Waste From Mound Site	Characterization at SRS – WIPP Disposal	5.46
SR-W090	Elemental Mercury - High Rad	Treatment by aging F/B mercury treatment	0.0
SR-W091	Contaminated Debris (High Rad)	Macroencapsulation and disposal at NTS	0.2
SR-W092*	TRU Mixed Waste from Battelle Columbus Site*	Characterization at SRS - WIPP Disposal*	0.0
TOTALS			146,262.03

NOTES: The volumes may not represent actual volumes of mixed waste stored at SRS as of the date of the annual update. The volume of wastes stored in tanks or certain special containers marked with an asterisk (*) is reported as net. Volume of wastes stored in other containers such as boxes or drums is reported as gross. Volumes have been updated from those volumes reported in the 2010 STP update due to waste treatment progress, waste generation, changes in volume of waste streams based on further characterization, reassignment of some stream volumes to different stream numbers, and inventory adjustments.

Waste streams with 0 volumes have been treated or otherwise managed in accordance with RCRA regulations, or are future waste streams.

Waste streams with N/A in the volume columns have had their waste volume incorporated into other waste streams or, if they have been re-characterized, or no longer a part of the STP.

Table 11.2 Volume Summary by Treatment Facility		
Waste Stream No.	Waste Stream Name	Current Cumulative Inventory through 7/01/11 (m³)
Commercial Vendor Treatment		
<u>Treatment Standard – Thermal treatment</u>		
SR-W001	Rad-Contaminated Solvents	0.0

Table 11.2 Volume Summary by Treatment Facility		
Waste Stream No.	Waste Stream Name	Current Cumulative Inventory through 7/01/11 (m³)
SR-W018	Listed Incinerable Solids	0.0
SR-W028	Mark 15 Filter Paper	0.0
SR-W055	Job Control Waste Containing Solvent Contaminated Wipes	0.0
SR-W071	Wastewater Suitable for Thermal Treatment or Stabilization	0.0
SR-W081	Reactive/Ignitable Waste	0.0
SR-W087	Bettis Atomic Power Laboratory Contaminated Oil (BT-W035, part of BT-W003)	0.0
	Subtotal	0.0
Effluent Treatment Project-Wastewater Treatment		
SR-W077	Aqueous Characteristic Wastewater	0.0
Offsite Vendor for Treatment		
SR-W045	PUREX Organic Waste	0.7
Liquid Waste Operations		
SR-W020	Salt Processing Filters	0.0
D-Area Heavy Water Operations Facility		
SR-W032B	Mercury-Contaminated Heavy Water Residues	0.0
	Subtotal	0.7
Defense Waste Processing Facility / Saltstone Facilities		
SR-W016	221-F Canyon High-Level Radioactive Liquid Waste / Low-Level Radioactive Liquid Waste	55,720
SR-W017	H-Canyon High-Level Radioactive Liquid Waste / Low-Level Radioactive Liquid Waste	88,372
	Subtotal	144,092
Meet Treatment Standards		
SR-W024	Tritium Gold Traps	3.0
SR-W040	Stabilized Sludge/LDR-Compliant Debris	0.0
	Subtotal	3.0
Macroencapsulation as a 90-Day Generator		
SR-W015	Tritium Contaminated Equipment	40.9
SR-W023	Cadmium Safety/Control Rods	3.4
SR-W072	Supernate or Sludge Contaminated Debris from High-Level Waste (HLW) Operations	0.0
	Subtotal	44.3

Table 11.2 Volume Summary by Treatment Facility		
Waste Stream No.	Waste Stream Name	Current Cumulative Inventory through 7/01/11 (m³)
M-Area Vendor Treatment Facility		
SR-W005	Mark 15 Filtercake	0.0
SR-W029	M-Area Sludge Treatability Samples	0.0
SR-W031	Uranium/Chromium Solution	0.0
SR-W037	M-Area Plating Line Sludge	0.0
SR-W038	Plating Line Sump Material	0.0
SR-W039	Nickel Plating Line Solution	0.0
	Subtotal	0.0
SRS (Facility TBD)–Macroencapsulation		
SR-W060	Tritiated Water with Mercury	0.0
	Subtotal	0.0
Treatment by Aging Followed by Thermal treatment and/or Hg treatment		
SR-W036	Tritiated Oil with Mercury	7.06
SR-W090	Elemental Mercury (High Rad)	0.0
	Subtotal	7.06
Offsite Vendor Facility – Macroencapsulation		
SR-W062	Low-Level Contaminated Debris	2.8
SR-W069	Low-Level Waste (LLW) Lead-to be Macroencapsulated Onsite	0.0
	Subtotal	2.8
Offsite Vendor Stabilization		
SR-W048	Soils from Spill Remediation	0.0
SR-W073	Cadmium-Containing Raschig Rings	0.0
SR-W082	Radioactive Chemicals, Metals, and Pesticides (CMP) Soil	0.0
SR-W088	Sludges and Non-Debris Solids	0.0
	Subtotal	0.0
Offsite Vendor Facility–Amalgamation		
SR-W014	Elemental (Liquid) Mercury - Sitewide	0.0
SR-W086	Characteristically Hazardous Non-Incinerable Solids	0.0
	Subtotal	0.0
Offsite DOE–Combust in the TSCA Incinerator at ETP		
SR-W079	Polychlorinated Biphenyl (PCB) Mixed Waste	0.0
Waste Streams to be Further Characterized		
None		

Table 11.2 Volume Summary by Treatment Facility

Waste Stream No.	Waste Stream Name	Current Cumulative Inventory through 7/01/11 (m ³)
TRU Waste Streams Undergoing Characterization/Certification for Shipment to WIPP		
SR-W006	CH Mixed TRU/Liquids	0.01
SR-W009	Silver Coated Packing Material	6.9
SR-W027	CH Mixed TRU	2,096
SR-W053	Rocky Flats Ash	0.0
SR-W089	TRU Waste From Mound	5.46
SR-W092	TRU Mixed Waste from Battelle Columbus	0.0
	Subtotal	2,108.37
Lab Waste Treated as a 90-day Generator at SRNL followed by Vitrification		
SR-W050	Waste to Support High-Level Waste (HLW) Processing Demonstrations	0.6
	Subtotal	0.6
Scrap Metal Exclusion		
SR-W011	Cadmium Coated HEPA Filters	0.0
Future Generation – Treatment Plan to be Developed		
SR-W091	Contaminated Debris – High Rad	0.2
	Subtotal	0.2
Waste Streams Consolidated		
SR-W002	Rad-Contaminated Chlorofluorocarbons	N/A
SR-W003	Solvent Contaminated Debris (LLW)	N/A
SR-W004	M-Area Plating Line Sludge from Supernate Treatment	N/A
SR-W008	Separations Area Sample Receipts from SRNL	N/A
SR-W010	Scintillation Solutions	N/A
SR-W012	Toxic Characteristic Solids	N/A
SR-W019	244-H RBOF High Activity Liquid Waste	N/A
SR-W025	Solvent /TRU Job Control Waste <100 nCi/g	N/A
SR-W026	CH Mixed TRU/Thirds	N/A
SR-W030	Spent Methanol Solution	N/A
SR-W033	Thirds/TRU Job Control Waste <100 nCi/g	N/A
SR-W034	Calcium Metal	N/A
SR-W035	Mixed Waste Oil–Sitewide	N/A
SR-W042	Paints and Thinners	N/A
SR-W043	Lab Waste with Tetraphenyl Borate	N/A
SR-W044	Tri-Butyl-Phosphate & n-Paraffin–TRU	N/A
SR-W051	Spent Filter Cartridges and Carbon Filter Media	N/A

Table 11.2 Volume Summary by Treatment Facility

Waste Stream No.	Waste Stream Name	Current Cumulative Inventory through 7/01/11 (m³)
SR-W054	Enriched Uranium Contaminated with Lead	N/A
SR-W058	Mixed Sludge Waste with Mercury from DWPF Treatability Studies	N/A
SR-W059	Tetrabutyl Titanate (TBT)	N/A
SR-W061	DWPF Mercury	N/A
SR-W063	Macroencapsulated Low-Level Waste	N/A
SR-W064	IDW and Remediation Soils/Sludges/Slurries	N/A
SR-W065	IDW Monitoring Well Purge/Development Water	N/A
SR-W066	IDW and Remediation Debris (Parts)	N/A
SR-W067	IDW and Remediation Personal Protective Equipment (PPE) Waste	N/A
SR-W068	Elemental (Liquid) Mercury–Sitewide	N/A
SR-W070	Mixed Waste from Laboratory Samples	N/A
SR-W084	Remediation Waste Soils that Meet LDR	N/A

Waste Streams Re-characterized or Eliminated

SR-W007	SRNL Sample Material	N/A
SR-W013	Low-Level Waste (LLW) Lead – To be Decontaminated Onsite	N/A
SR-W021	Poisoned Catalyst Material	N/A
SR-W022	DWPF Benzene	N/A
SR-W032A	Mercury-Contaminated Heavy Water	N/A
SR-W045A	PUREX Aqueous Waste	N/A
SR-W046	Consolidated Incineration Facility Ash	N/A
SR-W047	Consolidated Incineration Facility Blowdown	N/A
SR-W049	Tank E-3-1 Clean Out Material	N/A
SR-W052	Cadmium Contaminated Glovebox Section	N/A
SR-W056	Job Control Waste with Enriched Uranium and Solvent Contaminated Wipes	N/A
SR-W057	D-Tested Neutron Generators	N/A
SR-W078	LDR Hazardous Waste Awaiting Radiological Screening	N/A

Waste Stream No.	Waste Stream Name	Current Cumulative Inventory through 7/01/11 (m³)
SR-W080	Charleston Naval Shipyard (CN-W001, CN-W004)	N/A
SR-W083	Mercury- and Chromium-Contaminated Residues	N/A
SR-W085	Rocky Flats Plutonium Fluoride Residues	N/A
TOTAL		146,262.03

* Volume includes unstabilized ash and blowdown that does not meet the LDR standards.

** Mixed LLW conservatively managed as TRU (transuranic waste).

NOTES: Volumes reflect inventories as of July 1, 2011. They may not represent actual volumes of mixed waste of SRS as of the date of the annual update.

Waste streams with 0 volumes have been treated or otherwise managed in accordance with RCRA regulations, or are future waste streams.

Waste streams with N/A in the volume columns have had their waste volume incorporated into other waste streams or, if they have been re-characterized, or are no longer a part of the STP.

Totals do not include IDW streams 64, 65, 66, and 67.

Residue from mixed waste treatment requiring RCRA Subtitle C disposal (as of 7/1/11).			
Waste Stream	Treatment	Residue Status	Comment
SR-W015 Mercury/Tritium Contaminated Equipment	Macroencapsulated in a stainless steel container	Container stored at SRS in TRU Waste Storage Building (TRU Pad 16) Total Volume = 40.9 m ³	Waste continues to be generated.
SR-W023 Cadmium Safety/Control Rods	Macroencapsulated in a stainless steel container.	Container stored at SRS on TRU Pad 2. Volume of waste = 3.4 m ³	Total volume = 15.2 m ³ Calculated from container outside dimension.
SR-W024 Mercury/Tritium Gold Traps	Macroencapsulated in a stainless steel container.	Containers stored at SRS TRU Waste Storage Building (TRU Pad 16). Total volume = 3.0 m ³ .	
SR-W040 Listed Stabilized Sludge/Listed LDR Compliant Debris	Stabilization at CIF Ashcrete Unit or Vitrification at M-Area Vendor Treatment Facility	Containers of M area vitrified glass were delisted and moved to LLW disposal.	

NOTES:

The following characteristic waste streams have undergone treatment. However, treatment residues are not Toxicity Characteristic Leaching Procedure (TCLP) hazardous and do not require disposal in a RCRA Subtitle C facility: SR-W041, Aqueous Mercury and Lead; SR-W077, Aqueous Characteristic Wastewater; SR-W032B, Mercury-Contaminated Heavy Water Residues.

As of June 30, 2011, DWPF has produced or filled a total of 3,158 stainless steel glass canisters, which have been placed in storage at SRS awaiting final disposition.

As of November 5, 2001, all CIF stabilized ashcrete and blowdown had been shipped offsite for disposal.

The following material has been recycled in part or total. No residues have been generated requiring disposal as mixed waste by SRS: SR-W011, Cadmium-Coated HEPA Filters; SR-W032, Mercury-Contaminated Heavy Water.

By previous agreement with SCDHEC, small (less than 55 gallons) quantities of mixed waste(s) stored in RCRA Satellite Accumulation Areas [R.61-79.262.34(c)] are not subject to R.61-79.268 and are not included in this plan unless requested otherwise by SCDHEC. Also per agreement with SCDHEC, wastes stored in 90-day accumulation areas are not included in the waste inventory.

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