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Savannah River Site, Aiken, SC, 29808

JAN 15 2013

SRR-ESH-2012-00129
RSM Track#: 10048

Terrel J. Spears, Assistant Manager
Waste Disposition Projects
U.S. Department of Energy
Savannah River Operations Office
Post Office Box A
Aiken, SC 29802

Dear Mr. Spears:

FY12 UPDATE OF THE RADIOACTIVE WASTE MANAGEMENT BASIS (RWMB) FOR EFFLUENT TREATMENT PROJECT (ETP)

The Effluent Treatment Project (ETP) Radioactive waste Management Basis (RWMB), document number Q-RWM-H-00009, Rev. 0, is attached for your review and approval. The ETP RWMB has been updated to ensure the RWMB is consistent with the facility operations and radioactive waste management. The following documents are also attached to facilitate your review. Other documents identified in the RWMB can be provided upon request.

1. Q-ESR-G-00055, *Waste Certification Plan for the Liquid Waste Facilities*, Rev. 0, October 2012.
2. G-FSP-G-00017, *Agreement Between Savannah River Nuclear Solutions and Savannah River Remediation for Solid Waste Management Services*, Rev. 2, 10/01/2011.

The ETP RWMB has been updated as follows:

- Updated the documents list to reflect the most current versions.
- Include the new Liquid Waste Facilities Waste Certification Plan that supersedes the previous ETP Waste Certification Plan.
- Added the agreement between SRR and SRNS for solid waste management services.
- Changed the document number to be consistent with the SRS recommended numbering protocol.

These RWMB updates have been discussed with Mr. Herbert Crapse of your staff. If you have any questions, please contact Robert Petras at 952-4350 of my Staff.

Sincerely,

Owen Stevens, Manager
Environmental Compliance
Savannah River Remediation LLC

Att. (3)

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JAN 15 2013

c: H.M. Crapse, DOE, 704-S
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Q-RWM-H-00009
Rev. 0
December 2012

SAVANNAH RIVER REMEDIATION (SRR)

EFFLENT TREATMENT PROJECT (ETP)

RADIOACTIVE WASTE MANAGEMENT BASIS

Savannah River Remediation
Savannah River Site
Aiken, SC 29808

PREFACE

This document constitutes the Radioactive Waste Management Basis (RWMB) for the Effluent Treatment Project (ETP) in accordance with DOE 435.1, *Radioactive Waste Management.* The RWMB as defined in DOE Order 435.1 applies to DOE facilities, operations, and activities to provide near- and long-term protection of public, workers, and the environment. The RWMB consists of controls and analyses such as waste certification programs, facility safety documents, facility waste acceptance requirements, facility closure plans, performance assessments, composite analysis, and other facility-specific processes, procedures, and analyses made to comply with DOE O 435.1 and its manual. In the case of nuclear facilities with Authorization Basis/Safety Basis Documentation (AB/SB), most of the controls required for a radioactive waste management basis are implemented by the AB/SB. ETP has an Auditable Safety Analysis document, which is reflected in this RWMB.

Per DOE Order 435.1, the RWMB shall (a) reference or define the conditions under which the facility may operate based on the radioactive waste management documentation, (b) include the applicable elements identified in the specific waste type chapter of the manual; and (c) be developed using the graded approach process.

SRR APPROVALS

Concurred by: _____ 12/5/12
R. J. Petras, LW Waste Certification Program Lead — Date

Concurred by: _____ 12/6/2012
B.L. Green, Tank Farm and ETP Operations Manager — Date

Concurred by: C Blair for M.T. Keefer 12/13/2012
M. T. Keefer, Tank Farm Facility Engineering Manager — Date

Approved by:: Neil R Davis 12/17/12
N. R. Davis, Tank Farm Operations Director — Date

RADIOACTIVE WASTE MANAGEMENT BASIS DOCUMENT LIST

1.0 Effluent Treatment Project (ETP)

Q-ESR-G-00055, *Waste Certification Plan for the Liquid Waste Facilities*, Rev. 0, October 2012.

X-SD-H-00009, *F/H Effluent Treatment Project Waste Acceptance Criteria*, Rev, 6, June 2012

Q-ESR-H-00012, *Liquid Waste Operations Implementation of DOE Order 435.1 Container Staging, Inspection, and Monitoring Requirements*, Rev. 0, September 2009.

WSRC-TR-98-00379, *Auditable Safety Analysis for the Effluent Treatment Facility*, Rev. 14, July 2011.

SWD-ETF-00-00005, ETF Justification for Appropriate Monitoring Instruments, 1/14/00

G-FSP-G-00017, *Agreement Between Savannah River Nuclear Solutions and Savannah River Remediation for Solid Waste Management Services*, Rev. 2, October 2011.

2.0 References

DOE O 435.1, *Radioactive Waste Management,* latest revision.

11Q Manual, *Facility Safety Document Manual,* latest revision.

1S SRS *Radioactive Waste Requirements Manual,* latest revision.

Waste Certification Plan

for the Liquid Waste Facilities

SAVANNAH RIVER REMEDIATION LLC

October 31, 2012
Authored by: Robert J. Petras

Q-ESR-G-00055 Rev. 0

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Prepared by:

R. J. Petras, LW Waste Certification Program Lead — 10/24/12 Date

Reviewed by:

O. D. Stevens, LW Environmental Manager — 10/24/12 Date

R. N. Hinds, LW QA Manager — 10/30/2012 Date

J. R. Wilson, Field Safety and Health Manager — 10/24/2012 Date

Approval:

W. R. Stewart, LW Waste Manager — 10/24/12 Date

B. L. Green, Tank Farm and ETP Operations Manager — 10/28/2012 Date

M. N. Borders, DWPF and Saltstone Operations Manager — 10/31/2012 Date

D. C. Wood, Waste Removal and Tank Closure Manager — 10-24-12 Date

Revision Summary

Revision	Date	Description
0	October 2011	Complete rewrite; therefore revision bars are not used. Incorporated waste certification plans from Effluent Treatment Facility, Defense Waste Processing Facility and Saltstone Facility into one plan. New plan number.

Table of Contents

1.0 REFERENCES

Implementation of this Plan will use the most current revision of the following documents.

1.1 Common Manuals, Procedures, and Plans

- DOE Order 435.1, Radioactive Waste Management
- SRR-DWP-2011-00046, Liquid Waste Operations Facilities Waste Minimization Plan
- Q-ESR-H-00012, Liquid Waste Operations Implementation of DOE Order 435.1 Container Staging, Inspection, and Monitoring Requirements
- Q-CIT-G-00001, Waste Incidental to Reprocessing Citation Determination
- WLWOWC00, Liquid Waste Facility Operations Waste Certification Training and Qualification Program Description
- 1-01, Management Policies
- 1B Manual, Management Requirements and Procedures
- 4B, Training and Qualification Program Manual
- E7 Conduct of Engineering
- 1Q Quality Assurance Manual
- 3Q Environmental Compliance Manual
- 5Q Radiological Control Manual
- 12Q Assessment Manual
- 14Q Material Control and Accountability Manual
- 19Q, Transportation Safety Manual
- 1S SRS Radioactive Waste Requirements Manual
- 2S Conduct of Operations Manual

1.2 CST Facility Specific Procedures, Plans and Safety Documents

- Q-RWM-H-00007 Savannah River Remediation (SRR) Concentrate, Storage, and Transfer Facilities (CSTF) Radioactive Waste Management Basis
- SW21 LWO Waste Handling Administrative Procedures
- N-AA-G-00001, U. S. Department of Energy Savannah River Operations Office and Westinghouse Savannah River Company Authorization Agreement for Concentration, Storage, and Transfer Facilities (CSTF)
- X-WCP-H-00019, Waste Compliance Plan for Tank Farm Transfers to DWPF (U)
- X-WCP-H-00014, Tank 50 Waste Compliance Plan for Transfers to Saltstone
- WSRC-TR-2004-00372, F- and H- Tank Farms Solid Waste Sampling and Characterization Plan
- Q-CLC-H-00204, Revalidation of the Tank Farm Supernate Low Level Radiological Waste Stream
- Q-CLC-H-00402, Revalidation of Tank Farm Sludge Low Level Radiological Waste Stream
- U-ESR-H-00068, Modular Caustic Side Solvent Extraction Unit Sample Plan
- CBU-SPT-2005-00010, Mercury in the Modular CSSX Unit
- WSRC-RP-2004-00707, Organic Mercury in the Caustic-Side Solvent Extraction Unit (MCU)

- WSRC-STI-2007-00354, MCU Solvent Gas Generation Testing
- HLW-TR-2003-00130, High Level Waste Tank Farms Characterization of Sealand Containers with Routine Low Activity Waste
- Q-CLC-H-00231, Revalidation of the Tank Farm Low Activity Waste (LAW) Stream
- WSRC-TR-94-0290, HLW Waste Characterization in Support of Low Level Waste Certification
- WSRC-TR-94-0297, Characterization of Hazardous Constituents in HLW Supernate and Implications for Solid LLW Generation
- WSRC-TR-94-0579, HLW Sludge Characterization In Support of Low Level Waste Certification
- HLW-HLE-97-0035, Screening Criteria for Benzene Concentrations Inside B-25 and OP-45 Containers
- X-CLC-H-00575, MCU Waste Streams Radiological Makeup

1.3 DWPF Facility Specific Procedures, Plans and Safety Documents

- Q-RWM-S-00001 Savannah River Remediation LLC (SRR) Defense Waste Processing Facility (DWPF) Radioactive Waste Management Basis
- SW4-20, Waste Disposition Waste Handling Procedures
- N-AA-S-00001, Authorization Agreement for the Defense Waste Processing Facility
- X-SD-G-00008, Waste Acceptance Criteria for Sludge, ARP, and MCU Process Transfers to 512-S and DWPF (U)
- N-ESR-S-00003, Container Capacity of the DWPF Waste Staging Area
- Q-CLC-S-00080, Waste Stream Distribution for Low Level Waste Generated in 511-S During Processing of DWPF Sludge Batch 7A
- Q-CLC-S-00081, Hazardous Evaluation of Low Level Waste Generated in 511-S During Processing of DWPF Sludge Batch 7A
- Q-CLC-S-00085, Waste Stream Distribution for Low Level Waste Generated in 512-S During Processing of ISDP Material
- Q-CLC-S-00086, Hazardous Evaluation of Low Level Waste Generated in 512-S During Processing of ISDP Material3
- Q-CLC-S-00082, Waste Stream Distribution for Low Level Waste Generated in 221-S During Processing of SB7A and ISDP Batch 3 Strip Effluent and MST/Sludge Solids
- Q-CLC-S-00083, Hazardous Evaluation of Low Level Waste Generated in 221-S During Processing of SB7A and ISDP Batch 3 Strip Effluent and MST/Sludge Solids
- Basic Data of the Defense Waste Processing Facility, DPSP-80-1033, Curie Balance Rev. 91, E. I. du Pont de Nemours and Company, December 1984
- WSRC-RP-94-452, M. J. Plodinec and J. W. Ray, Curie Balance for DWPF Safety Calculations
- X-CLC-S-00010, DWPF Chemical Inventory
- X-CLC-S-00011, DWPF Radionuclide Inventory
- SWD-WGC-99-0064, P. D. Hunt, TRU Waste Generator Certification Program, 1999

1.4 ETP Facility Specific Procedures, Plans and Safety Documents

- SRR-TFO-2010-00038, Savannah River Remediation (SRR) Effluent Treatment Project (ETP) Radioactive Waste Management Basis
- ETP-WM-BAG-01, ETP Waste Packaging and Tagging
- ETP-WM-VER-01, ETP Waste Verification
- ETP-WM-SHP-01, ETP Waste Shipment
- ETP-WM-INS-01, ETP Staging Areas Inspections and Reports
- ETP-WM-GIC-01, ETP Green is Clean/Associated Waste Handling and Preparation for Shipment
- WSRC-TR-98-00379 Auditable Safety Analysis for the Effluent Treatment Plant
- Q-CLC-H-00202, Revalidation of ETP Plant Waste Stream ETF-001-125
- Q-ESR-H-00010, Liquid Waste Disposition Effluent Treatment Plant Sampling and Analysis Plan

1.5 Saltstone Facility Specific Procedures, Plans and Safety Documents

- Q-RWM-Z-00001, Savannah River Remediation (SRR) Saltstone Facility Radioactive Waste Management Basis
- SW4-20, Waste Disposition Waste Handling Procedures
- N-AA-Z-00001, Authorization Agreement for the Saltstone Facility
- DWPF Annual Self-Assessment Plan
- Saltstone Annual Self-Assessment Plan
- Q-CLC-H-00405, Waste Stream Distribution for Low Level Waste Generated in MCU
- Q-CLC-Z-00014, Waste Characterization of Low Level Waste Generated in Saltstone During Processing of Tank 50

2.0 PURPOSE AND SCOPE

2.1 Purpose

The Liquid Waste (LW) Waste Certification Plan (WCP) describes the waste management program for generating, segregating, characterizing, packaging, and handling the various wastes generated within the LW facilities. Implementation of this WCP provides assurance that waste shipped to the Solid Waste Management (SWM) treatment, storage, and disposal (TSD) facilities meets the requirements of the 1S *SRS Radioactive Waste Requirements Manual* and basis requirements documents *(DOE Order 435.1, RCRA, etc.).*

2.2 Objectives

The objectives for this Waste Certification Plan are:

- To document LW compliance with DOE Order 435.1, 1S Manual, and other applicable site requirements.
- To document the training and qualification requirements for individuals who generate, identify, segregate, package, verify, certify, characterize, manifest and ship waste.
- To document the program that ensures that waste is properly characterized to meet the waste acceptance criteria for the appropriate TSD facility.

2.3 Scope

2.3.1 Applicability

This WCP is applicable to all LW activities which may generate waste by LW personnel, subcontractors, vendors, or other personnel supporting LW facilities.

2.3.2 Waste Categories

This WCP describes the waste management program for the following categories of waste generated during facility operations.

- Low level radioactive waste (LLW)
- Transuranic waste (TRU)
- Hazardous waste (HW)
- Mixed waste (MW)

Categories of other wastes generated include:

- Universal waste
- Asbestos waste
- Recycle waste
- Contaminated large equipment (CLED)
- Polychlorinated Biphenyl (PCB) waste

This plan does not address:

- High-level waste (HLW)
- CERCLA waste
- NORM
- Accountable material
- Beryllium contaminated waste [i]
- Elemental carbon [ii]
- Liquid waste managed and processed within the LW system
- Sanitary (municipal landfill) waste
- Classified waste [iii]

High-Level Waste must meet the DOE Order 435.1 Citation, Evaluation, or Section 3116 Determination criteria to be managed as LLW or TRU waste as appropriate.

This WCP also includes the controls and procedures necessary for the generation and certification of TRU waste. TRU, mixed TRU (MTRU), and Mixed Waste (MW) will be characterized on a case-by-case basis due to low volume and infrequent generation. Saltstone and ETP do not generate TRU waste and are not expected to generate TRU waste for the remainder of operations. The Tank Farm facilities do not currently generate TRU waste but have generated, certified and shipped TRU waste in the past. DWPF has also generated, certified and shipped TRU waste and has the most potential to generate additional TRU waste of any LW facility.

2.3.3 Facilities

This WCP is applicable to all waste generating activities that occur within the LW facilities. The LW facilities consist of the following:

- Concentrate Storage Transfer Facility (CST) consisting of:
  - Effluent Treatment Project (ETP)
  - F Tank Farm (FTF)
  - H Tank Farm (HTF)
  - 278-H Modular Caustic Side Solvent Extraction Unit (MCU)
  - 299-H Waste Management Maintenance Facility
  - 96-H containing the strike tanks of Actinide Removal Process (ARP)
- Defense Waste Processing Facility (DWPF), including:
  - 512-S containing the cross-flow filters of ARP
  - 511-S Low Point Pump Pit (LPPP)
- Saltstone Facility (SS), consisting of:
  - Saltstone Production Facility (SPF)
  - Saltstone Disposal Facility (SDF)

2.3.4 Treatment, Storage, and Disposal Facilities

The receiving SWM TSD facilities for LLW addressed in this plan are the E-Area Vaults (EAVs), Slit Trenches (ST), Engineered Trenches (ET), and Component in Grout (CIG). The receiving SWM TSD facilities for MW are the mixed waste storage facilities (MWSFs). Furthermore, designated TRU waste streams will be sent offsite by SWM for disposal to the Waste Isolation Pilot Plant after temporary storage in the appropriate SWM facilities.

2.4 Facility Process Overview

Historically, the objective of the Tank Farms was to receive liquid wastes from both Canyons and safely store the waste in 51 underground storage tanks. The primary influents into the Tank Farms today are DWPF recycle and H-Canyon receipts. Small volumes of liquid waste are also received from the Effluent Treatment Plant (ETP) and sludge washing. H-Tank Farm prepares sludge and salt waste for processing in DWPF and Saltstone. Sludge is washed in the Extended Sludge Processing (ESP) facility and salt waste is processed through the Interim Salt Disposition Project (ISDP) which includes the Actinide Removal Process (ARP) and the Modular Caustic Side Solvent Extraction Unit (MCU).

The ETP collects and treats radioactive and chemically contaminated wastewater which is primarily evaporator overheads from the Tank Farm evaporators and the H-Canyon general purpose (GP) evaporator. The wastewater is processed for release via a National Pollution Discharge Elimination System (NPDES) permitted outfall. The processing of this wastewater allows approximately 99% of the water to be released back to the environment.

Final processing of washed sludge and salt waste occurs in DWPF. This waste is blended with glass frit and melted to vitrify it into a borosilicate glass form. A low level radioactive recycle stream from DWPF is returned to the Tank Farms.

The Saltstone facility treats and disposes of low activity salt solutions generated from processing activities in H-Canyon, ETP, F and H Tank Farms, and ISDP. The low level salt solution is collected in Tank 50, located in HTF, and transferred to Saltstone for treatment and disposal.

Should the LW processes or characterization methodologies change, this plan will be revised accordingly.

3.0 ORGANIZATION

Implementation of this plan is a coordinated and interdisciplinary function. The organization structure for the management of waste generated in LW is shown in Attachment A. This structure reflects the identified and defined responsibilities in support of this Waste Certification Plan.

LW management is committed to compliance with DOE Orders, EPA & SCDHEC regulations, and SRS Waste Acceptance Criteria. Management allocates sufficient resources to waste management operations in order to ensure compliance with the above listed documents. Personnel from all LW organizations that generate, package, verify, handle, certify, and transfer waste are responsible for ensuring it is properly executed. All employees have the authority and responsibility to stop a non-conforming condition at any time during the waste generation or waste handling process. Key responsibilities for each person involved in waste management activities are defined below.

3.1 Responsibilities

3.1.1 Area Project/Operations Manager

The Area Project/Operations Manager is responsible for:

- Ensuring the overall implementation of the Waste Certification Program
- Ensuring that adequate resources are allocated to support the Waste Certification Program
- Authorizing the GCO(s), via signed qualifications, to perform the duties of a GCO
- Approving individual initial qualification for personnel who perform waste handling activities in the facility
- Reviewing and approving this WCP
- Costs incurred as a result of noncompliance with the 1S Manual

3.1.2 LW Waste Manager

The LW Waste Manager is responsible for:

- Being accountable for waste management performance as delegated by the Area Project/Operations Manager
- Directing the activities of the GCO's
- Ensuring that waste generators are trained and comply with facility waste handling requirements
- Reviewing and approving this WCP
- Ensuring that rejected waste is dispositioned in a timely fashion
- Approving and ensuring compliance with Waste Minimization Plan
- Supporting Waste Certification Program assessments
- Ensuring resources and programs are adequate to support waste handling
- Imposing suspension of waste shipments to SWM when conditions warrant
- Ensuring facility compliance with the SRS 1S Manual and waste handling procedures
- Designating Generator Certification Officials, Alternate GCOs, and Waste Verifiers to oversee the administration of the Waste Certification Program
- Communicating status of the facility waste program to senior management
- Ensuring self-assessments are performed to evaluate generator compliance with this WCP, facility waste handling requirements, and the SRS 1S Manual
- Ensuring that corrective actions are tracked and completed
- Ensuring the applicable work groups receive appropriate training covering any facility waste handling procedure revisions
- Communicating waste minimization progress to Waste Certification Program Lead and, as necessary, to SWM and LW personnel
- Supporting the development, deployment, and implementation of facility-specific and site-level waste minimization programs and pollution prevention technologies, including instituting best-fit commercial nuclear practices
- Ensuring the facilities are aware of their waste minimization goals
- Ensure technical input is obtained during work planning to ensure waste has a path to disposal and can meet waste acceptance criteria
- Ensure container needs are forecasted in advance to allow for procurement of containers that may need six months or more to procure and are available for specific work activities
- Notifying SWM in a timely manner, within one business day of discovery, the identification of any non-conformance that affects the quality of previously shipped waste

3.1.3 Waste Certification Program Lead

The Waste Certification Program Lead is responsible for:

- Serving as the Solid Waste Management Council (SWMC) representative for LW
- Managing, reviewing, and maintaining this WCP
- Submitting WCP revisions to the SWM POC for review
- Ensuring the Waste Certification Program is maintained in accordance with this WCP
- Ensuring SWM is notified of GCO personnel changes
- Signing Deviation Requests prior to transmittal to SWM
- Preparing Deviation Requests for technical issues in accordance with 1S Chapter 4, General Waste Requirements
- Approving annual and out-year waste generation forecasts
- Supporting assessments of the waste certification program
- Reviewing and approving SRS 1S Manual procedure revisions
- Ensuring the LW Radioactive Waste Management Basis (RWMB) documents are reviewed annually and updated as necessary
- Serving as the manual 'owner' for LW waste handling procedures to ensure that all the requirements of the SRS 1S Manual are satisfied
- Communicating changes in the waste program that could impact existing initial and/or continuing training materials or the WLWOWC00, LW Facility Operations Waste Certification Training and Qualification Program Description (TPD) to the Training Manager
- Establishing criteria for rejecting waste and evaluating performance indicators to determine effectiveness of actions
- Supporting training activities, as specified in the TPD
- Performing WIR Citation Determination reviews
- Advocating waste minimization strategies within the project and providing guidance to enable volume/type reductions

3.1.4 Generator Certification Official (Lead GCO)/Alternate GCO

The Generator Certification Official is responsible for:

- Identifying when revisions to this certification plan are necessary
- Stopping work, without concern for any cost or schedule obligation, to prevent non-conforming waste from being shipped to SWM TSD facilities
- Providing direction for all waste handling program activities by the area waste verifiers
- Serving as the primary contact for facility waste handling operations
- Supporting the development and implementation of facility waste minimization initiatives
- Maintaining control of waste containers
- Reviewing work packages as necessary
- Obtaining samples to support waste characterization
- Preparing Deviation Requests in accordance with 1S Manual requirements
- Forecasting waste generation by waste stream and activity
- Ensuring the accuracy of waste information entered into the Waste Information and Tracking System (WITS)
- Submitting waste stream characterization forms to SWM
- Coordinating the transportation of waste to SWM
- Submitting container approval request forms
- Assuming responsibility for non-conforming waste shipment/package

- Complying with the requirements contained in the 1S, 3Q and facility waste handling procedures
- Maintaining records in accordance with the generators record retention schedule
- Monitoring the loading of waste into approved containers
- Supporting training activities as specified in the Waste Certification TPD
- Performing self-assessments of the waste program in accordance with the self-assessment schedule
- Notifying facility management and Waste Certification Program Lead in a timely manner, typically within one business day of discovery, of any non-conformance that affects the quality of previously shipped waste
- Interfacing with the Waste Characterization Cognizant Technical Function (CTF) to resolve technical issues associated with waste characterization and waste handling
- Ensuring LLW staging meets program requirements
- Ensuring LLW Staging limits are met, staging areas and containers are periodically inspected, and the Area Project Manager is informed when waste will be staged >90 days or is likely to exceed 180 days
- Notifying the Waste Characterization CTF when changes to waste streams occur
- Participating in job planning and project planning meetings to ensure the generation of waste is avoided to the maximum extent economically practical
- Being primary point of contact and advocate for waste minimization program and soliciting management support for new waste minimization initiatives
- Developing/submitting Pollution Prevention Activity Forms (PPAFs) to capture progress toward waste minimization objectives

3.1.5 Waste Verifiers (WV)

The Waste Verifier is responsible for:

- Verifying that each waste bag and container complies with the facility waste handling procedures
- Completing and maintaining all waste verifier training requirements
- Identifying new opportunities to improve the Waste Certification Program
- Providing waste descriptive information required for WITS and E-14 entry
- Ensuring that required waste tags, and inventory log sheets are completed and accurately describe the contents of every waste package
- Complying with the "Rejected Waste" program requirements
- Performing visual examinations of facility accumulation and central staging areas to ensure compliance with the facility waste handling procedures
- Assisting facility personnel with questions concerning general waste certification topics
- Performing tasks as required by the GCO and within waste verifier qualifications

3.1.6 Waste Generator (WG)

The waste generator is responsible for:

- Generating, segregating, and packaging waste in compliance with facility waste handling procedure requirements
- Following guidance given by the GCO/WV for specific jobs
- Completing and maintaining all waste generator training requirements
- Practicing waste minimization
- Obtaining radiological and chemical samples and dose rate surveys, as directed by the GCO, during non-routine jobs to support waste characterization

3.1.7 *Environmental Compliance Authority (ECA)*

The Environmental Compliance Authority (ECA) is responsible for:

- Performing and documenting hazardous waste determinations
- Providing day-to-day environmental support to the facility including identifying and interpreting applicable environmental compliance regulations, requirements, and guidance
- Approving the purchase of hazardous chemicals for the facility and providing preliminary disposal instructions
- Reviewing and approving waste characterizations (e.g., WSCFs, CPRs, and WCFs) to ensure regulatory compliance
- Providing ECA approval for mixed and hazardous waste transfers/shipments

3.1.8 *Quality Assurance Function (CQF)*

QA is responsible for:

- Reviewing and approving this WCP
- Processing NCRs and PRs in accordance with 1B MRP 4.23, 1S Manual Chapter 2 and 1Q Manual, 1-01 Management Policies, and MP 5.35 Corrective Action Program
- Assisting with self-assessments as directed by the LWO Waste Program Manager

3.1.9 *Waste Characterization Engineer or CTF (WCE)*

The Waste Characterization Engineer is responsible for:

- Characterizing waste with sufficient accuracy to permit proper segregation, reduction, treatment, storage, and disposal of routine and non-routine wastes in accordance with the 1S Manual requirements
- Collecting and maintaining validation data from analyses and sample results as recorded evidence of proper characterization
- Meeting the programmatic requirements contained in 1S Manual, Chapter 3, Waste Characterization Program to include characterizing waste streams to accurately document the varieties and quantities of radionuclides, hazardous constituents, physical and chemical characteristics, and other information as required
- Maintaining auditable characterization documentation
- Assisting the GCO in the completion of Waste Characterization Forms
- Reviewing and evaluating, in accordance with 1S Manual Chapter 3, process changes to determine impact on existing waste streams
- Acting as the CTF for the waste program
    - Developing and implementing new methods to characterize non-routine waste
    - Revalidating the waste streams
    - Obtaining SWM characterization review and concurrence
    - Performing self-assessments of the waste program in accordance with the self-assessment program

3.1.10 *Waste Acceptance Engineering*

Waste Acceptance Engineering is responsible for:

- Notifying the WCE of changes in processes creating waste that results in waste different from that identified on the generator's approved waste characterization forms

3.1.11 Liquid Waste Training Manager

The Training Manager is responsible for:

- Ensuring that the waste certification training group prepares personnel to safely and efficiently manage waste
- Ensuring training requirements are monitored for appropriate LW personnel and report delinquencies to management for further action
- Ensuring training records are maintained in auditable and controlled files per approved procedures
- Maintaining and implementing the Waste Certification TPD
- Ensuring that the waste training program is current to DOE Orders, regulatory and Site requirements
- Reviewing, approving, implementing, and administering waste certification training
- Ensuring the training personnel tasked to develop and/or conduct training are technically and instructionally qualified to perform assigned duties and that required qualifications are maintained

3.1.12 Radiological Protection Department (RPD)

RPD is responsible for:

- Ensuring radiological surveys are performed in compliance with 1S Manual Chapter 3 and the facility waste handling procedures
- Documenting radiological surveys
- Ensuring instrumentation used is calibrated

3.1.13 Chemical Coordinator

The Chemical Coordinator is responsible for:

- Implementing and overseeing the purchase, use, storage, and disposal of chemicals to ensure compliance with Site, Division, and Facility procedures
- Identifying non-hazardous or less hazardous substitutes for chemicals
- Responding to questions related to chemical use and disposal
- Interfacing with the ECA to ensure regulatory requirements are met
- Ensuring that chemical inventories are completed, as required

3.1.14 SWM Point of Contact (POC)

The SWM Point-of-Contact is responsible for:

- Facilitating resolution of issues associated with waste
- Communicating SWM initiatives and issues to the Waste Certification Program Lead
- Providing input for improvement from SWM
- Reviewing this WCP

4.0 TRAINING

Designated LW personnel who perform waste management activities are required to be adequately trained to ensure that each individual clearly understands their role and responsibility for waste handling. The training program includes specific requirements for Generator Certification Officials (GCOs), Waste Verifiers (WVs), and Waste Generators (WGs). The level of training will be commensurate with the scope, complexity, and nature of the tasks performed. Untrained personnel may generate waste provided a trained person directs them. This will facilitate the use of sub-contractors and others performing work for LW.

The specific requirements of the Waste Training Program are contained in the WLWOWC00, Liquid Waste Facility Operations Waste Certification Training and Qualification Program Description. The training program description includes entry-level requirements, prerequisites, course curriculum, evaluation methodology, qualification process, and continuing training. The training program and associated records are maintained in accordance with the SRS 4B Manual. Training records are maintained in files that are auditable and are controlled.

Waste training is given to WG, WV, and GCO personnel. GCOs and WVs qualifications are approved by the Area Project Manager to perform assigned duties after completion of all training requirements. The approval and documentation process are accomplished via an individual qualification card, as defined in the TPD. GCOs complete LW training requirements prior to performing GCO tasks. GCOs maintain qualifications by meeting site and LW continuing training requirements.

ECAs and CTFs shall have both hazardous and radioactive waste characterization training recognized by Solid Waste Management if they are required to sign as the ECA or CTF for waste characterization and for other required waste related documentation directly associated with waste planned for shipment to SWM TSD facilities.

5.0 WASTE GENERATION, PROCESSING, AND PACKAGING

5.1 Facility and Process Description

Approximately 36.5 Mgal of radioactive liquid waste, containing 424 MCi of radioactivity, are currently stored in 47 active waste storage tanks located in two separate locations, H-Tank Farm (29 Tanks) and F-Tank Farm (18 Tanks). This waste is a complex mixture of insoluble metal hydroxide solids, commonly referred to as sludge, and soluble salt supernate. The supernate volume is reduced by evaporation, which also concentrates the soluble salts to their solubility limits. The resulting solution cools and crystallizes as salts. The resulting crystalline solids are commonly referred to as salt cake. The salt cake and supernate together are referred to as salt waste. The sludge contains the majority of the long-lived (half-life >30 years) radionuclides (i.e. actinides) and strontium. Approximately 95% of the salt waste radioactivity is short-lived (half-life <30 years), Cs-137 and its daughter product, Ba-137m, along with low levels of actinide contamination trapped within the interstitial salt.

Tank 48 is currently used for storing potassium tetraphenyl borate (TPB) laden waste from the abandoned ITP process. Because of safety basis issues, TPB-laden waste cannot be sent to other tanks in the Tank Farm, nor can other wastes be sent to Tank 48. The radioactive component of Tank 48 is unconcentrated supernate. This waste is not being processed and may require a revision to this WCP before processing will commence.

5.1.1 Evaporator Operation and Tank Farm Surveillance

Typically, fresh waste is transferred into a holding tank to allow insoluble solids (sludge) to settle. The supernate liquid is decanted and volume reduced in the 242-25H, 242-16H, and 242-16F evaporators. Evaporator overheads are collected and processed through the ETP before discharge to a NPDES permitted outfall. The evaporator bottoms are transferred to a receipt tank, where the contents are cooled to crystallize dissolved salts. The remaining solution is recycled as evaporator feed and the cycle is repeated until as much water as possible has been removed. Eventually, the waste will be removed from the waste tanks and processed into feedstock for the DWPF and Saltstone Facility.

5.1.2 299-H Waste Management Maintenance Facility

The 299-H Waste Management Maintenance Facility supports Tank Farm operations. Liquid wastes generated during decontamination are transferred back to HTF. The solid waste generated from each specific job is managed and segregated based on the pre-decontamination waste stream and post-decontamination waste stream.

5.1.3 Wastewater Processing

The ETP consists of various process and support systems to collect and treat the wastewater. The ETP Basin Systems (F/H area) are divided into two separate functions. The retention basins collect and store H/F-Tank Farm storm water runoff for environmental discharge, pending sample analysis; the cooling water basins collect and store F/H-Canyon cooling water diversions. F-Cooling water basins also receive process feed from the F-Tank Farm Evaporator overheads condensate tank.

Wastewater influents are transferred from the F/H Area Lift Station Hold Tanks into the ETP Wastewater Collection Tanks then to the Treatment/Process Systems. The wastewater pH is adjusted during this transfer to precipitate dissolved solids from the wastewater. The water is fed through a Filtration System which removes the suspended solids and transfers the filtered water (Filtrate) to an Organic Removal System. The Organic Removal System then removes any heavy metals (mainly mercury) and organics (including volatiles) from the wastewater.

Water from the Organic Removal System is cooled and undergoes another pH adjustment to minimize scaling in the ETP Reverse Osmosis System. The Reverse Osmosis System removes dissolved solids (mainly salts) from the water. After pH adjustment, the water is sent to an Ion Exchange System for final treatment. The Ion Exchange System removes the residual heavy metals, cesium, and strontium that may still be present in the water.

The Ion Exchange System provides the final pH adjustment to the Treated Water leaving the R/O System, removes residual amounts of heavy metals (mainly mercury), cesium, and strontium that may still be present in the water. As the effluent leaves the Ion Exchange system an in-line sample is obtained as it passes to one of three Treated Water Tanks. The results of this sample determines whether the contents of the Treated Water Tank are discharged to Upper Three Runs Creek or recycled back to one of two Waste Water Collection Tanks.

The concentrates developed in the ETP Process Systems are transferred to the ETP evaporator for further concentration and subsequent transfer to Tank 50 at H Tank Farm.

ETP has the potential to generate low level mixed waste through normal operations, construction and maintenance activities. The primary sources of hazardous constituents in the ETP are chemical materials. Disposing of chemicals will be in accordance with 3Q Manual and the ETP Waste Handling procedures. Mixed waste may also be generated as a result of spills of Investigation Derived Waste (IDW) prior to introduction into the ETP system. Spills are reportable and handled in accordance with 9B and 3Q Manual procedures. All mixed waste, regardless of origin, will be managed in accordance with ETP Waste Handling procedures and in compliance with 1S.

5.1.4 Sludge Processing

Sludge comprises about 10 vol % of the stored waste, and is a complex mixture of insoluble hydroxide and other precipitates. Most of the radioactive contaminants are contained in the sludge. Sludge is "washed" in Tank 40 to reduce the amount of non-radioactive soluble salts remaining in the sludge slurry. The processed sludge is called "washed sludge." During sludge processing, wash water is generated and is volume-reduced through one of the evaporators. After washing, the sludge contains the majority of the long-lived (half-life >30 years) radionuclides (i.e. actinides) and strontium. It is blended into separate sludge "batches" to be stabilized in DWPF through the vitrification process.

5.1.5 Salt Waste Processing

Salt wastes are processed through ARP and MCU that make up the Interim Salt Disposition Project (ISDP).

5.1.5.1 Actinide Removal Process (ARP)

Salt waste contains soluble Cs-137 and actinide concentrations too high to meet the Saltstone WAC. Salt waste is first sent to ARP.

The 241-96H facility is the first phase of the ARP and will:

- Receive batches of salt solution from Tank 49
- Dilute the salt solution with process water and add Monosodium Titanate (MST)
- Agitate the MST/salt solution to achieve strontium and actinide adsorption
- Transfer the MST/salt solution to 512-S for filtration

The 512-S facility (which contains ARP phase two filtration equipment) is located in S-Area. After the MST/sludge is filtered in building 512-S, the sludge solids are sent to 511-S. The clarified salt solution (CSS) exiting ARP is sent to MCU (located in H-Tank Farm) to strip Cs-137 from the caustic solution.

5.1.5.2 Modular CSSX Unit (MCU)

The clarified salt solution from ARP is processed in MCU to remove Cs-137 using the Caustic Side Solvent Extraction (CSSX) process.

The MCU facility will:

- Receive batches of CSS from 512-S ARP Facility
- Contact salt solution with organic solvent in the extraction contactors to strip Cs-137 into the solvent
- Transfer decontamination salt solution (DSS) to Tank 50
- Transfer the cesium strip effluent (SE) to DWPF.

Actinide and strontium removal from the liquid feed waste stream at ARP will eliminate the potential for TRU waste generation in MCU.

5.1.6 High Level Waste Processing

DWPF is designed to process the sludge and the treated salt into a borosilicate glass. DWPF processes the monosodium titanate (MST)/sludge from ARP, cesium SE from MCU, and washed sludge slurry from Tank 40. DWPF receives, combines, and processes these three streams into a stable solid waste glass form suitable for permanent storage.

The resulting slurry is combined with borosilicate glass frit and transferred to the melter. The melter vitrifies the feed into a molten borosilicate glass, which is poured into stainless steel canisters. During processing, mercury is removed as a byproduct and sent to the Mercury Purification Cell (MPC) for further processing.

The outer surface of the canister is decontaminated and a cover is welded in place prior to transfer for temporary onsite storage. Radioactive liquid wastes resulting from the DWPF process are collected in the Recycle Collection Tank (RCT) and transferred back to the Tank Farms.

5.1.7 Low Activity Salt Waste Processing

The Saltstone facility receives low level liquid from Tank 50 via underground transfer lines and is combined with a dry blend of cement, slag, and flyash in the Saltstone Production Facility (SPF). The resulting mixture is referred to as "grout". The grout is pumped to the Saltstone Disposal Facility (SDF) which consisting of engineered vaults where it solidifies into "saltstone".

5.2 Waste Stream Description

LLW can be broken down into two broad categories, routine and non-routine. Routine waste is generated during normal operations and maintenance activities. Routine waste generally consists of job control waste, low activity waste (LAW), non-process jumpers and equipment, building HEPA filters, soil and rubble, and any other waste generated by routine operations and maintenance activities. Job control waste typically consists of plastic, paper, cloth, and materials associated with conduct of operations or maintenance activities within a contamination area. Routine waste can be characterized, manifested, and shipped by the GCO without WCE and /or ECA support and is generally considered non-contact waste.

Non-routine waste consists of process equipment, waste generated in the facility from equipment repairs, waste removal project activities, tank closure projects, or other waste items that require WCE characterization support to manifest as waste. Non-routine waste is characterized on a case-by-case basis and documented in accordance with the 1S Manual.

When a process change occurs, the impact of the change is evaluated by the WCE. If a new waste stream is needed but is not active before waste is generated, the waste will be labeled and stored until characterization is complete. A waste characterization request (WCR) for non-routine waste is submitted to the WCE for characterization.

Packaging of LLW will be in 55-gallon drums, B-12s, B-25s, Sealands or other approved waste containers. The facility waste handling procedures cover the normal segregation, handling, and packaging of this waste. Any nonstandard waste containers will be submitted to SWM for approval, in accordance with the 1S Manual.

LLW, MW, TRU, and MTRU waste generated in LW facilities is managed in accordance with the LW facility waste handling procedures. Any other waste generated in the LW facilities will be characterized on a case-by-case basis.

LW waste streams include:

Tank Farm Supernate	ETP Basin Sediment
Tank Farm Sludge	ETP Ion Exchange Cation Resin
Tank Farm Precipitate	512-S ISDP
Tank Farm Low Activity Waste	511-S Sludge
MCU	221-S JCW and Process Equipment
ETP Treatment Plant	Saltstone Low Level Salt Waste
ETP Mercury Removal Resin	TRU Waste
ETP Activated Carbon	Mixed Waste

5.2.1 Tank Farm Supernate

Supernate is the predominant waste stream generated in the Tank Farms. Supernate is the upper layer of waste in the tank and contains the soluble radionuclides. It is radiologically characterized by high gamma and lower alpha and beta radiation levels. Mercury is the limiting hazardous constituent. Waste is generated from known Supernate jobs or from areas posted <10,000 dpm/100 cm^2 alpha. All general radiological areas in the Tank Farms are Supernate contaminated.

5.2.2 Tank Farm Sludge

Sludge is the lower layer of waste in the tanks and contains the insoluble radionuclides. It is radiologically characterized by low gamma, higher alpha and beta radiation levels. Mercury is the limiting hazardous constituent. Waste is generated only in areas posted >10,000 dpm/100 cm2 alpha or from known sludge work, i.e. sludge sampling.

5.2.3 Tank Farm Precipitate

Precipitate was generated exclusively in H Tank Farm from wastes associated with the ITP process and Tank 48 liquid wastes. It is radiologically similar to supernate but contains benzene as the limiting hazardous constituent. Since deactivation of 241-96H to make room for ARP is complete, there is no equipment remaining in H-Tank Farm contaminated with the precipitate waste stream. Therefore, the only source of precipitate waste is Tank 48 liquids and equipment that has come into contact with the liquid.

5.2.4 Tank Farm Low Activity Waste (LAW)

LAW is a composite waste stream of the supernate, sludge, and precipitate waste streams that consists of any non-process equipment waste that can typically be hand carried to a Sealand container that has a dose rate < 5mrem/hr at 30cm. Some larger equipment items may be placed in the container if evaluated and approved by the WCE and the default weight of the container is not exceeded. Mercury is the limiting hazardous constituent.

5.2.5 MCU Salt Batch

The MCU waste is associated with the decontaminated salt solution. Filtered salt solution is contacted with an organic solvent to strip the Cs-137 into the solvent. Mercury is the limiting hazardous constituent. Waste generated in general radiological areas in 241-278H is MCU contaminated waste.

5.2.6 ETP Treatment Plant

Treatment Plant Waste consists of non-compactable solid waste and job control waste (JCW) from the treatment plant area and the basin areas generated from routine plant operation and maintenance activities.

5.2.7 ETP Mercury Removal

Mercury Removal resin is a polystyrene cation resin which is designed to remove any residual mercury prior to the Organic Removal carbon columns and the Ion Exchange columns. Once the resin is determined to be spent, it is removed from service, dewatered, placed into supersacks or small filter bags, and then transferred to a final disposal container. O/R Hg removal resin is sampled as it is pumped into the bag. Each sample is submitted for analysis. The IX Hg removal resin once it is determined to be spent is pumped through hard piping from its Hg removal column to the spent resin tank to be dewatered. While the resin is being pumped, it is sampled at the beginning of the transfer and just before the end.

5.2.8 ETP Activated Carbon

Activated carbon (granular or pelletized) removes organic compounds from the ETP wastewater influent. When the carbon is determined to be spent, the carbon within the stainless steel process vessel is dewatered, sampled, and slurried for removal from the process vessel. It is then dewatered and packaged for disposal.

5.2.9 ETP Basin Sediment

During normal operations, the Retention Basins and the Cooling Water Basins accumulate silt, sand, algae and mud. Periodically, theses sediments must be cleaned out to ensure the basins can fulfill their intended functions. Before disposal, the sediment is sampled, dewatered, and packaged into approved containers.

5.2.10 ETP Ion Exchange Cation Resin

Ion Exchange (IX) cation resin removes trace amounts of cesium and strontium from the ETP wastewater influent. Resin is changed out based on sample results indicating poor performance. Regenerating the resin beds removes the cesium and strontium in the resin bed. Resin is changed out based on sample results indicating poor performance. The IX cation resin once it is determined to be spent is pumped through hard piping from its IX removal column to the spent resin tank to be dewatered. While the resin is being pumped, it is sampled at the beginning of the transfer and just before the end.

5.2.11 512-S ISDP

The primary source of contamination in 512-S is salt material transferred from Tank 49. All general radiation areas in 512-S are contaminated with Salt Material from Tank 49.

5.2.12 511-S Sludge

The primary source of contamination in 511-S is sludge transferred from Tank 40. This facility has received sludge since DWPF operations began in 1996. All general radiation areas in 511-S are contaminated with sludge material from Tank 40.

5.2.13 221-S JCW and Process Equipment

The primary source of contamination in 221-S is from sludge, MST sludge solids, and strip effluent. These three streams into DWPF are used to create a composite waste stream used to characterize LLW generated in 221-S.

5.2.14 Saltstone Low Level Salt Waste

Based on Tank 50 being the single source of radioactive contamination, there is only one identified LLW stream for the Saltstone facility. Waste generated in the Salt Processing Facility (SPF) is contaminated with the decontaminated salt solution from MCU.

5.2.15 TRU Waste

The characterization of TRU waste streams is covered on a case-by-case basis whenever high transuranic specific activity is encountered. In addition, high mercury content in tank waste and lead counterweights are the most likely sources of RCRA hazardous constituents that contribute to mixed TRU (MTRU) waste. All TRU/MTRU waste stream characterization forms will be reviewed and approved by SWM prior to the shipment of the waste and acceptance by SWM. In order to prevent or minimize TRU or Mixed TRU generated in the DWPF Lab Cells, waste shall be deconned using acid soaks, or CO2 blasting.

Known TRU/MTRU waste is segregated during maintenance and operations activities from other waste streams to prevent commingling. TRU waste is packaged in 55 gallon drums or Standard Waste Boxes (SWBs) and handled in accordance with facility waste handling procedures.

Waste evaluations can be from actual process samples, radioactive contamination information obtained directly from waste, dose-to-curie method when a gamma signature allows for referencing radionuclide distributions to Cs-137, or other 1S Manual Chapter 3 approved methods.

5.2.16 Mixed Waste

Mercury (Hg) compounds are present in all the Liquid Waste tanks and as a result can be found in all down stream facilities. The majority of the mercury is in the insoluble sludge fraction. Mercury is also contained in the saltcake fraction as insoluble salt, and in the supernate fraction as a soluble Hg hydroxide compound. Dimethylmercury formed during evaporator operations is collected primarily in the evaporator overheads system. Because dimethylmercury has a high vapor pressure and low solubility, any dimethylmercury created during evaporator operation will escape as a gaseous emission. Mercury will be introduced to ARP and MCU along with the dissolved saltcake feed as insoluble salt or soluble hydroxide. Filtration at 512-S through the 0.1 micron filter will remove insoluble Hg forms. No extraction of soluble mercury compounds in MCU is expected so the soluble mercury compounds will remain in the aqueous salt solution.

Benzene is present in Tank 48 as sodium or potassium tetraphenylborate. Benzene concentrations are determined using data provided by Tank Farm Process Engineering. The ratio for benzene to Cs-137 has been established in WSRC-TR-94-0523.

All other hazardous constituents for all of the LW facilities are determined by the ECA.

5.2.17 Waste Incidental to Reprocessing Citation Determination

All radioactive waste generated within the Tank Farms and DWPF is evaluated to determine whether it can be managed as LLW in accordance with Q-CIT-G-00001, Waste Incidental to Reprocessing Citation Determination. Waste determined to meet the citation criteria can be managed as LLW, MW, or TRU/MTRU. This document is referenced in the Radioactive Waste Management Basis for the facilities that process HLW.

5.3 Waste Acceptance Criteria Exclusions

The facility waste handling procedures cover specific 1S Manual criteria in Chapters 5 & 6 that cannot be categorically excluded. Based upon Chemical Coordinator review of the facility and chemical inventory, the following criteria have been categorically excluded:

- Wastes that can react violently or explosively when mixed with water (e.g., sodium metal)
- Wastes that contain pyrophoric materials (e.g., phosphorus, uranium metal)
- Wastes that are expected to contain chelating or complexing agents in amounts greater than 1 wt% of the waste matrix
- TSCA waste
- Chemically incompatible wastes, as defined in 40 CFR 260.10 and referenced in 1S Manual, Chapter 4, in the same waste container
- Wastes that could react or degrade its waste container physically or chemically
- Wastes that contain organic nitrated resins
- Wastes contaminated with pathogens, infectious wastes, or other etiologic agents (animal carcasses are addressed in facility waste handling procedures, or 1S Manual Chapter 6)
- Waste that has excessive gas generation that could create a pressure buildup in containers
- Shock-sensitive wastes with the potential to explode, and/or without inhibitors to retard peroxide formation
- Cyanide or sulfide-bearing waste

5.4 Waste Handling Process Description

The waste handling procedures address normal segregation, handling, and packaging of waste. Low-level radioactive solid waste generated by LW will be classified into waste streams (described in Section 5.2 and subsections) and by general waste categories:

- Low-level waste (LLW)
- Transuranic waste (TRU)
- Mixed waste (MW)
- Mixed TRU (MTRU)

Typically, waste will be processed in the following manner:

- The waste generator inspects the waste for prohibited items.
- The waste generator segregates waste at the job site based upon approved waste streams, and then places it in a primary waste container (e.g., plastic bag).
- Waste Verifiers (WVs) ensure that waste is segregated correctly, and that all required waste tags and labeling are completed properly
- Radiological Control Operations (RCO) inspectors perform a screening radiation survey of the primary waste packages
- Waste generators or WVs move the primary waste packages to the waste accumulation point. Accumulation points for MW will be established and controlled as Satellite Accumulation Areas by the GCO.
- Secondary waste containers (e.g., 55-gallon drums, B-25 boxes, standard waste boxes) are located at the waste accumulation points. WVs place the primary waste packages into the appropriate containers for the waste stream and completes the container log sheet.
- When a secondary waste container is filled, WVs seals the resulting final waste package.
- RCO inspectors perform a radiation survey of the waste packages using the Bicron Microrem LE instrument (or equivalent) for dose-to-curie (DTC) calculations. WVs verify that all required labeling is accurately completed.
- WVs transfer the waste packages to the waste staging area. LLW, TRU and MW packages will be staged in separate designated areas and kept segregated. The MW storage area will be established and controlled as a Staging Area by the GCO.
- WVs weigh the waste packages.
- The GCO determines the characterization of waste packages using dose-to-curie (DTC) calculations or room postings as described in facility procedures. Radiation dose rates for use in DTC typically will be obtained at the waste accumulation points. However, they may be taken at the waste staging area if needed.
- The GCO performs hazard screening in accordance with the facility waste handling procedures or in coordination with the ECA.
- Characterization engineers perform characterization of TRU, mixed, and non-routine waste streams as applicable.
- The GCO certifies the waste after the waste is placed into the final disposal container and waste characterization is complete.
- The GCO prepares shipping manifests and other needed waste forms. The Waste Information and Tracking System (WITS) and E-14 computer programs generate most of these.
- The GCO schedules shipments of waste packages from the Waste Staging Area to the receiving TSD facilities.

Deviations from the typical LLW, TRU and MW handling strategy just described may occur because of non routine factors such as high radiation dose rates or the specific waste generation location within the facility.

5.5 Waste Container Control

Waste containers will be routinely inspected and monitored to ensure container integrity is not compromised during waste staging. Staging of LLW begins when a waste container is declared full and closed. The requirements for the periodic visual inspection of containers (and for staging beyond 90 days) are specified in Q-ESR-H-00012, Liquid Waste Operations Implementation of DOE Order 435.1 Container Staging, Inspection, and Monitoring Requirements. Both criteria and frequency, for the visual inspection of containers are also specified in the facility waste handling procedures. This document is referenced in the Radioactive Waste Management Basis, for the respective facility. Facility assessments are performed to validate the container integrity during staging.

Waste containers in LW will be controlled to prevent or indicate intrusion. Access into containers will be controlled by the GCO using keyed locks/locking devices (i.e., chain and padlock), secured clips, wrench tightened nut and bolt, banding, seal devices, and/or adminstrative controls. Controlled access such as fenced areas with locked gates or locked rooms within a facility may be substituted for individual container controls. Empty containers staged for future use do not require access control provided they are inspected for integrity and unknown contents prior to use.

Facility unique numbering systems are used to track waste packages during filling, staging, and for transport for ultimate acceptance at SWM TSD facilities. Facility waste handling procedures contain steps that ensure filled waste containers are surveyed for external contamination and dose rates prior to shipping per 5Q Radiological Controls procedures.

5.6 Waste Staging Requirements

LW stores low level radioactive waste for the purpose of accumulation to facilitate transportation to a SWM TSD facility. This is defined as waste staging. Staging of waste begins when the GCO determines a waste container is full and closed. Radioactive waste staging will be done in a location and manner that protects the integrity of the waste for the expected time of staging, and minimizes worker exposure. Full containers of LLW will normally be staged no longer than 90 days to facilitate transportation for storage, treatment, and/or disposal. However, staging up to 180 days is justified and approved by DOE as part of the RWMB for each LW facility. DOE will be notified whenever waste is to be staged greater than 180 days or waste staging curie contents potentially exceed facility safety basis. Characterization Requests are completed by the GCOs to obtain priority on waste characterizations.

In accordance with DOE Order 435.1, "Radioactive Waste Management," low level waste must be staged in identified staging areas and inspected on a routine basis. Waste containers are staged in designated locations in each facility and are periodically inspected to ensure integrity.

Tritium contamination can be found throughout the effluent treatment process since there is no available technology for the removal of tritium from the wastewater. Tritium levels in the wastewater inflow are controlled by the waste acceptance criteria (WAC) for ETP. Historically, RCO has performed characterizations for tritium during periods when the facility was processing elevated concentrations of tritiated wastewater. All samples were analyzed using liquid scintillation with all air sample results less than 0.1 DAC or 2E-06 μCi/cc and smear results less than CA limits. Waste containers are not expected to exceed these levels and are not required to be monitored for off-gassing tritium.

6.0 ISOTOPIC AND ANALYTICAL CHARACTERIZATION

This Waste Certification Plan was developed based on facility waste characterization documents listed in the reference section of this plan. Due to revisions in the 1S Manual, the individual waste acceptance criteria that are referenced in the original characterization documents may not correspond to the current WAC document numbers. Nevertheless, the information is still valid. New waste streams or revisions will be characterized under the guidelines of 1S, Chapter 3. The details of the waste characterization are covered in the the Waste Characterization Calculations for each facility (see Section 1). Representative radionuclide and chemical distributions are used in conjunction with room postings, smears, or dose rate measurements to quantify activity in waste packages using STC, DTC, or other quantification methods in accordance with the 1S Manual.

Liquid waste processed in the facilities is the source of the contamination on the solid waste materials that are addressed in this certification plan. For most routine waste, representative liquid samples taken from feed tanks are used for distribution development and hazardous determinations. The sample results can be used to directly determine a radionuclide distribution or may be used as input to a material balance that is used to determine the radionuclide distribution.

Mercury and other hazardous heavy metals are present in the salt and sludge. However, LLW resulting from salt and sludge contamination is not expected to be mixed waste. Sample results are evaluated during the characterization process and a hazardous determination is included in the LLW characterization documentation.

The activity of waste genenrated in LW is quantified using approved methods in 1S, Chapter 3.

6.1 Tank Farms

Tank Farm Engineering uses tank transfer and sample data to maintain the Waste Characterization System (WCS). The tank data in WCS is used for characterization of Tank Farm routine and non-routine LLW. When non-routine waste cannot be characterized using existing waste streams, smears or direct sampling may be used to determine radiological distributions. The same sample methods are used for chemical characterization of the waste. Sampling and characterization of TF solid waste is discussed in WSRC-TR-2004-00372, Closure Business Unit F-and H-Tank Farms, Solid Waste Sampling and Characterization Plan. DTC is the primary method of quantifying activity of waste prior to disposal.

Additional sampling and analysis of materials processed through the Interim Salt Disposition Project (ISDP) are conducted. MCU waste distribution is determined from Tank 49 (or Tank 49 source tanks) qualification samples. The samples are analyzed to determine isotopic and metal concentrations to support solid waste characterization. The sample results are used as input to a material balance for the final concentrations in Tank 49. In addition, the decontamination factors for ARP are applied to the Sr-90 and the actinides. The remaining radionuclides and the lower concentrations of Sr-90 and actinides are transferred to MCU. These results are used to determine the radionuclide distribution for waste generated in MCU. The DTC method is used to quantify activity of LLW generated in MCU.

6.2 ETP

The radionuclides of concern at the ETP are primarily tritium, fission products and uranium isotopes.

For the ETP Plant Waste Stream, the waste stream distribution for process equipment and JCW is determined from analyzing the radionuclide inputs from the waste generators. The waste generators provide a radionuclide, chemical, and flow breakdown to the ETP, which is used to determine a weighted radionuclide inventory for distribution development.

When spent Hg resin and ion exchange cation resin are removed from service it is pumped from the column to be dewatered. The resin is sampled during pumping and analyzed for radionuclide and total metals analysis. Analytical results are used to determine the radiological distribution. Samples of activated carbon are taken when the carbon is removed from the process vessel. The samples are submitted for radionuclide and total metals analysis. The analytical results are used to determine the radiological distribution.

During collection of ETP basin sediment samples, RCO typically performs surveys to detect areas of higher activity. At a minimum, sediment is collected from several locations around the inlet, and then combined into one composite sample. The sample is analyzed for radionuclides and total metals. Analytical results are used to determine a radiological distribution.

For each of the ETP waste streams, the analytical data is used for both radiological and chemical characterization of the waste. Analytical data or room postings can be used to quantify activity of ETP waste.

6.3 DWPF

Feed qualification samples for the sludge and salt stream feeds to DWPF are obtained and the sample results are used for characterization of LLW. The DTC method is use to quantify activity of waste generated in DWPF.

Qualification samples from Tank 51 are analyzed and used to validate acceptability of the sludge waste for vitrification prior to transferring to DWPF in accordance with the Waste Compliance Plan for Tank Farm Transfers to DWPF. The sample results are also evaluated and used to validate the existing waste stream or develop a new waste stream distribution for 511-S. The same data is also used for chemical characterization of 511-S waste.

Qualification samples from Tank 49 (or Tank 49 source tanks) are analyzed and used to validate the acceptability of the waste for processing through ARP, MCU, and transferring to DWPF and Saltstone in accordance with the Waste Compliance Plan for Tank Farm Transfers to DWPF and Saltstone. The sample results may be used as input to a material balance for the material in Tank 49. Either the analytical results or a material balance is used to validate the existing waste stream or develop a new waste stream for 512-S. The same data is also used for chemical characterization of 512-S waste.

The sludge from Tank 40, MST/sludge from 512-S, and the Cs-137 from MCU are combined into one waste stream for characterization of waste generated in 221-S.

6.4 Saltstone

Feed qualification samples for the salt stream may be taken from Tank 50 or the feed tanks to Tank 50. These sample results are used as input into a material balance that is used to develop the Saltstone LLW stream distribution used to characterize routine JCW and decharacterized waste generated in Z-Area.

Mercury and other hazardous heavy metals are present in the salt, thereby making it a potential mixed waste stream. However, LLW resulting from salt contamination is not expected to be mixed waste. Sample results are evaluated during the characterization process and a hazardous determination is included in the LLW characterization documentation.

Decharacterized LLW (formerly Resource Conservation and Recovery Act (RCRA) hazardous) is generated in SPF and SDF. Grout removed from the process in SPF prior to transfer to SDF must be segregated and managed as decharacterized LLW. JCW generated due to cleanup activities associated with weepage from the SDF vaults will be segregated and managed as decharacterized LLW. Decharacterized LLW will be stored adjacent to the disposal vaults until enough waste is accumulated for disposal in the SDF or at a permitted Title D Lanfill off site.

6.5 TRU Waste

TRU waste is determined based on a known radionuclide distribution, curie content, and waste weight. Known TRU/MTRU waste is segregated during maintenance and operations activities from other waste streams to prevent commingling. TRU waste is packaged in 55 gallon drums or Standard Waste Boxes (SWBs) and handled in accordance with facility waste handling procedures. For routine waste, TRU is calculated in the Waste Information Tracking System (WITS). For non-routine waste, TRU is calculated by the WCE.

6.6 Low Activity Waste

Routine waste generated in the Tank Farms can normally be managed under the low activity (LAW) waste stream and placed into a Sealand container. The LAW bag/item dose rate is less than or equal to 5 mrem/hr at 30 cm. This ensures insufficient radioactivity exists to warrant a WIR evaluation to be completed. The maximum dose rate on the outside of the Sealand is 50 mrem/hr at 5 cm. Hazardous, mixed, or unique waste (with dose rates greater than 5 mrem/hr at 30 cm) items are prohibited. The applicable waste stream (i.e. Supernate or sludge) and the generation location are not required to be identified.

6.7 Mixed Waste

Hazardous concentrations are determined from sampling data or data obtained from WCS. Radionuclide distributions are based on existing waste streams.

7.0 MARKING AND LABELING

Marking and labeling of LLW, MW, TRU, and MTRU packages are performed in accordance with the requirements of the appropriate 1S Manual criteria, 19Q Manual criteria, and the 3Q Manual. Specific requirements to meet the 1S Manual Criteria and to allow for segregation of waste streams are described in the facility waste handling procedures.

8.0 DOCUMENT CONTROL AND RECORDS MANAGEMENT

Documentation for waste packages will comply with the requirements of applicable 1S Manual criteria. Specific requirements, including the GCO to sign the waste manifest prior to shipment of waste to the TSD, are found in the facility waste handling procedures and the 1S Manual. Some of the currently required documentation includes:

- Characterization forms for waste streams (e.g., OSR 29-82, 29-47 and 29-90)
- Radiological surveys for waste packages and shipments (refer to facility procedures)
- Shipping manifests for waste shipments (refer to facility procedures)

Waste certification plans are controlled in accordance with approved document controlled procedures. The development, review, revision, approval and cancellation of documents, including procedures, related to waste certification and characterization are controlled in accordance with 1Q Manual, QAP 6-1, and 1B Manual, MRP 3.31 and 3.32. Characterization documents or engineering evaluations are generated in accordance with E7 Manual requirements, procedures 2.31 and 3.60, as required by 1S, Chapter 3. Training records are maintained according to Manual 4B.

Proposed revisions to this Waste Certification Plan must include the current GCO(s) and the SWM POC on distribution for review. SWM POC and SWCC must be on the controlled distribution for the Waste Certification Plan.

Training records are maintained in accordance with Manual 4B. Characterization documents are permanent records that are independently checked and verified.

9.0 WASTE MINIMIZATION

SRR has adopted a hierarchical approach to waste reduction and has applied it to all types of waste. The first priority in waste reduction is to eliminate or minimize the generation of waste through source reduction, when practical. The second priority is to identify materials that are candidates for recycle/reuse. Waste that is not a candidate for recycle/reuse will be appropriately dispositioned in accordance with existing regulations to reduce volume, and/or mobility prior to staging or disposal. Waste minimization activities are a priority and a process for continuous improvement within LW helping to reduce costs of the waste program.

The Site Waste Minimization Program provides an organized, comprehensive, and continuous effort to systematically reduce waste generation. Source reduction, recycling, and reuse are among the practices used to achieve this goal. The waste minimization program addresses radioactive waste, hazardous waste, mixed waste, and clean waste. The program utilizes training, oversight, goal setting, planning, and comprehensive record keeping accomplishing its objectives.

All personnel associated with waste management perform waste minimization activities. This includes waste generators/handlers, waste verifiers and GCOs, and facility management. Whenever possible, LW contributes to waste minimization through survey and free release of materials with a potential to be contaminated. LW also supports waste minimization by keeping the number and size of contaminated areas small and by maintaining proper radiological containment systems. LW is also committed to rolling back as many areas as possible to non-contaminated areas.

Waste minimization activities include a hierarchy of cost-effective practices in accordance with the Environmental Compliance Manual, and may take the form of:

- Implementation of Radiological Buffer Areas and Contamination Areas rolled back to RBAs, whenever possible
- Free release of materials meeting applicable release criteria.
- Volume reduction
- Replacement of hazardous materials with non-hazardous or less hazardous material substitutes
- Waste reduction through the reuse of materials
- Improvement in decontamination procedures to enable the removal of radiological contamination from materials
- Waste reduction through the most cost-effective method possible
- Proper segregation to prevent the generation of mixed waste resulting from cross contamination
- Better job planning to take only required materials into the contamination areas
- Implement reusable items in facility instead of one-time use items
- Maintain a tool control program
- Size reduction

SRR-DWP-2011-00046, Liquid Waste Operations Facilities Waste Minimization Plan, describes the essential elements of the LW waste minimization program. This program implements the requirements of the 3Q Environmental Compliance Manual, Procedure ECM 6.11.

10.0 QUALITY ASSURANCE

LW quality assurance programs and controls are implemented in the waste program through procedures in the 1Q and facility waste handling procedures. QA is the Cognizant Quality Function (CQF) for LW organizations, and provides an independent measurement and overview of the adequacy and effectiveness of the LW certification program. Waste certification procedures are also reviewed by QA to ensure that adequate QA oversight is maintained in the waste management process.

10.1 Document Control

The development, review, revision, approval, and cancellation of documents, including procedures, related to waste certification and characterization are controlled per 1Q, QAP 6-1.

10.2 Verification

The main focus of the waste certification program is to ensure that the waste shipped to the SWM TSD facility meets the acceptance criteria of the receiving facility. The prevention of prohibited items into waste packages is a key part of the waste program.

Verification of waste begins with the waste generator who is trained to be cognizant of the requirements of the facility waste handling procedures. After the waste is bagged by the generator, a waste verifier checks the contents for prohibited items and applies a waste tag to the sealed bag indicating the waste is compliant with the requirements of the facility waste handling procedures.

Waste Verifiers are critical to the LW waste program because they ensure that the requirements of the facility procedures and 1S Manual are met. A WV is trained per the requirements of this certification plan and physically inspects each waste bag or item prior to its being placed in a waste container.

The GCO maintains overall responsibility for the program and performs checks to ensure that final documentation and container labeling and integrity meet the receiving facility's acceptance criteria. These checks include pre-shipment and manifest verifications as defined in the waste handling procedures. The manifest verification consists of an independent verification of the data entered into WITS for each waste container being transported to SWM and ensures to the best degree possible that the WITS data entries are complete and accurate. This verification is an integral part of the self-assessment process and will be performed at a frequency defined by the facility. A "Rejected Waste" tag is utilized on all waste that either the WV or GCO finds deficient up to the point of manifesting. Once deficient waste is manifested for shipment, an NCR is issued.

10.3 Self-Assessment, Independent Assessment

Self-assessments of waste handling activities are performed in accordance with Manual 12Q, Assessment Manual, and SCD-4, Assessment Performance Objectives and Criteria. Independent assessments, i.e., Facility Evaluation Board (FEB) assessments, are performed in accordance with Manual 12Q. LW management may request QA to perform assessments outside of facility self-assessment requirements as an independent oversight.

Continuous improvement in the waste certification program is being achieved from input by;

- FEB reviews
- Generator self-assessments
- SWM POC feedback
- SWM receipt inspection/verification

Assessments are performed to verify that the LW waste certification program activities are performed in accordance with the requirements of the 1S Manual. Scope, frequency and schedule of waste program self-assessments have been defined in each facility's Self-Assessment Plans. The scope of the assessments will include the waste certification process to include such areas as waste characterization, generation, handling, packaging, and shipping. Assessment information and status are maintained in STAR.

10.4 Control of Non-Conformances

Nonconforming items and activities are controlled per 1Q Manual, Procedure QAP 15-1 Control of Non-Conforming Item, 1-01 Management Policies, MP 5.35 Corrective Action Program, and Manual 1B, MRP 4.23 Corrective Action Program, respectively. As discussed in 1S Manual, Chapter 2, when non conformances are identified that affect the quality of previously shipped waste, the GCO will notify the appropriate TSD Facility Manager in a timely manner, typically within one business day, and initiate a NCR/ PR in accordance with Manual 1Q. QA will forward the NCR/PR originals to SWM QA to obtain SWM approvals of the disposition. QA will track NCRs, etc., written on waste handling activities (not exclusive to waste handling).

NCRs are written for identified waste handling non conformances that occur after the GCO has manifested the waste for shipment to the appropriate SWM TSD facility. Rejected waste tags are utilized up to the point at which the GCO has manifested the waste per facility waste handling procedures.

10.5 Suspension / Revocation Criteria

Specific guidance is provided in 1S Manual Chapter 2 regarding the suspension of waste shipments and revocation of a facility's waste certification. The responsible waste personnel in the facilities or Waste Certification Program Lead should not hesitate to suspend waste shipments if the facility's waste certification program is indeterminate.

10.6 Quality Assurance Records Management

Records related to waste characterization, certification, handling, and shipping will be controlled and processed per 1Q, QAP 17-1, Quality Assurance Records Management, and MRP 3.31 Records Management. The implementing procedures will identify specific records and retention periods.

10.7 Software Quality Assurance

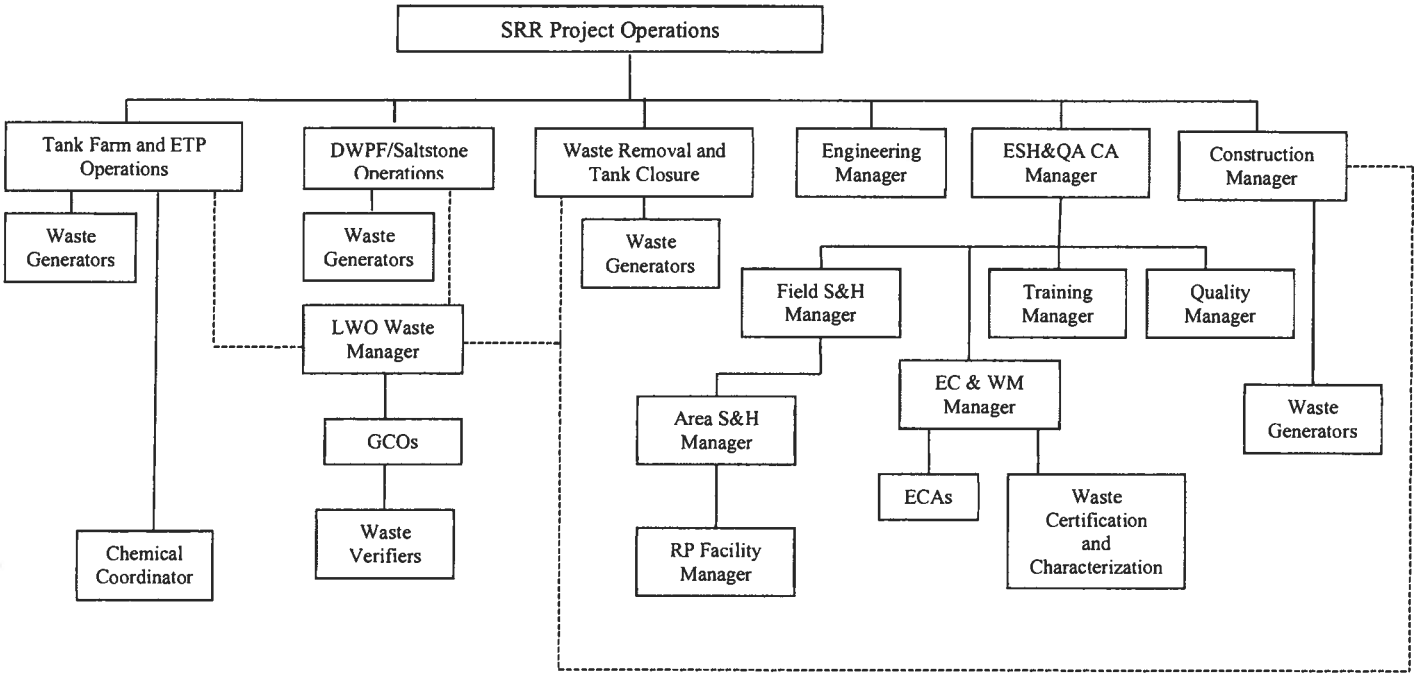
SWM owns and maintains the SRS-DTC program, WITS, and E-14 software programs to be utilized by LW. Accordingly, SWM QA is responsible for software quality assurance plans and procedures. Software used by LW for waste characterization shall meet applicable requirements of 1Q, Procedure 20-1.

There are two software applications used for waste tracking in ETP, the ETF Waste Tracking and ETF Waste Bags applications. These two applications form a database management program based upon Filemaker Pro. The ETP meets all applicable requirements of the 1Q Manual, Procedure 20-1, and it follows the software inventory requirements of the E7 Manual.

11.0 ATTACHMENT "A"

LW Waste Certification Organization

Attachment A



ENDNOTES

[i] Beryllium has been evaluated and is not present in any wastes generated by LW facility operations covered by this WCP.

[ii] Elemental carbon has been evaluated and is not present in any wastes generated by LW facility operations covered by this WCP.

[iii] Classified waste is not generated or received by LW facility operations covered by this WCP.

Appendix 17

REV. 2

G-FSP-G-00017

Functional Service Agreement Between Savannah River Nuclear Solutions, LLC and Savannah River Remediation, LLC Solid Waste Management and Area Completion Services

October 1, 2011

TABLE OF CONTENTS

1.0 INTRODUCTION

This Functional Service Agreement, Appendix 17 of Memorandum of Agreement (G-MOA-G-00002) describes the service exchange between the Savannah River Site (SRS) Site Management and Operations (M&O) contractor, Savannah River Nuclear Solutions, LLC (SRNS) and Savannah River Remediation LLC (SRR). This appendix describes the baseload work to be provided. Included as part of baseload activities may be, programmatic responsibilities for the Site, as well as, certain tasks related to ensuring/interpreting program effectiveness and activities considered to be part of Site Landlord and Site Services. Task-related activities outside of the agreed upon services documented in this FSA will be documented as part of the Service Level Agreements (SLAs). The parties agree to review this FSA at least annually and revise it if changes are needed as determined by the parties.

Unless otherwise noted in this document, the services described do not apply to SWPF/Parsons.

2.0 POLICIES, PROCEDURES, AND MANUALS

The following policies, procedures, and manuals will be maintained for the Site by SRNS and are applicable for services provided:

Manual Number	Manual Title	Applicable Sections
1S	Savannah River Site Waste Acceptance Manual	Entire Manual
3Q	Environmental Compliance Manual	Procedure 6.2, "Sanitary Waste Management and Disposal"
3Q	Environmental Compliance Manual	Procedure 6.11, "Pollution Prevention Program,"

Additionally SRNS will:

- Provide for the SWM Committee as a forum for waste generator input into waste program objectives and implementation strategies

- Provide for the DOE Order 435.1 Working Group as a forum for waste generator, storage, and disposal input into waste program objectives and implementation strategies.

3.0 CODES AND STANDARDS

SRNS SWM will provide solid waste disposition and associated direct support services for newly generated waste that is forecasted and approved for acceptance per generator waste quality assurance programs (e.g., waste certification) per applicable waste acceptance criteria as defined in the *Savannah River Site Waste Acceptance Criteria Manual (Manual 1S)*, and in Procedure 6.2, "Sanitary Waste Management and Disposal" *(Manual 3Q)*.

4.0 SOLID WASTE MANAGEMENT SERVICES

In order to ensure that sufficient capacity for disposal is available for each of the services below SRR must provide a waste forecast, by waste stream in accordance with Manual 1S. Waste generation rate variances should be communicated via a revised waste forecast in accordance with Manual 1S. SRR will support requests to DOE to obtain funding for waste forms not forecasted and planned in existing budgets. If inadequate funding is received, DOE-SR will be asked to work with the affected parties, as needed, to prioritize capacity usage.

Services identified below are typically available Monday through Thursday from 7:00 am to 4:00 pm throughout the year, excluding Site holidays. SRNS reserves the right to suspend service coverage due to planned operational outages and unplanned constraints.

SRNS will respond to service requests from SRR or incidents within reasonable time frames to support work priorities. Likewise, SRR are expected to respond to data and support requests from SRNS within reasonable time frames to support operations, incident reporting, and corrective actions.

4.1 Low-Level Waste

- Low-level Waste (LLW) Disposal Facility – SRNS provides on-site disposal options for LLW, including: low-activity waste vaults, intermediate-level waste vaults, slit trenches, engineered trenches, and Component-in-Grout trenches.

- LLW Off-site Disposal – For LLW that does not meet site acceptance criteria, SRNS provides technical and operations support for the treatment and disposal of newly generated waste using off-site treatment and disposal facilities. Off-site disposal options include Energy Solutions Utah, the Nevada Nuclear Security Site (NNSS) and Waste Control Specialists. A NNSS Waste Certification Program is maintained to support the NNSS disposal option.

- Provide for Waste Information Tracking System (WITS) database management supporting generator data input and package and facility limit checks required for waste acceptance approval to SRNS SWM LLW facilities and appropriate waste shipment request and approval software applications.

4.2 Transuranic Waste — Newly Generated

- Transuranic (TRU) Waste Storage Facility – SRNS provides TRU Waste Storage consisting of TRU Waste Storage Pads with and without enclosures. Resource Conservation and Recovery Act (RCRA) TRU waste is stored on South Carolina Department of Health and Environmental Control (SCDHEC) Part B permitted pads.

- TRU Waste Certification and Shipment for Disposal – SRNS maintains contracts and operations' support for the certification, packaging, and off-site shipment of newly generated waste per Waste Isolation Pilot Plant (WIPP) and TRU-protective action criteria (PAC) requirements.

- Provide for Waste Information Tracking System (WITS) database management supporting generator data input and package and facility limit checks required for waste acceptance approval of TRU waste and approval software applications.

4.3 Hazardous, PCB, and Mixed Waste — Newly Generated

- Hazardous, polychlorinated biphenyl (PCB), and Mixed Waste Storage Facilities – SRNS provides RCRA permitted Hazardous Waste Storage Facility (HWSF) consisting of buildings and waste storage pads.

- Hazardous, PCB, and Mixed Waste Disposal – SRNS provides technical and operations support for the shipment of newly generated waste using off-site treatment and disposal facilities' services. SRR operational support is required for all hazardous and mixed waste direct shipments from their facilities.

- SRNS provides the required DOE-Savannah River (SR) approved program for the certified unconditional release of non-radioactive hazardous waste for off-site disposition.

- SRNS provides for Hazardous/Mixed Waste Tracking (HMW Tracking, previously named E-14) database management supporting generator data input and package and facility limit checks required for waste acceptance approval to SRNS SWM HW/MW storage facilities.

4.4 Sanitary Waste Disposal Operations

SRNS SWM provides for the program oversight, collection, and disposal of sanitary waste generated across the Savannah River Site (SRS). Waste acceptance is per Procedure 6.2, "Sanitary Waste Management and Disposal" (Manual 3Q). Waste

collection and transport is provided for routine office and cafeteria waste collected in compactor trucks; other debris waste collection and transport is the generator's responsibility. SRNS currently maintains the following disposal operations for use by SRS organizations:

- Routine Sanitary Waste (office and cafeteria in compactor trucks) – Collection bins, transportation, recycle services at North Augusta Material Recovery Facility (MRF), and disposal.

- Construction & Demolition (C&D) Debris – Funding and operational oversight of the on-site C&D Landfill.

- Non-Routine Debris Waste to Three Rivers – Waste disposal fee funding, technical and operational contract support for SRR waste generators' use of the Three Rivers Authority commercial landfill. Any special waste handling fees and services or generator-caused corrective actions at the Three Rivers landfill is the generator's responsibility.

4.5 SRNS Waste Generator Certification Support and Oversight

SRNS SWM provides the following services in support of required waste generator programs to ship waste to on-site and off-site treatment/storage/disposal (T/S/D) facilities:

- Provide for initial generator certification approval and periodic follow-up surveillances and audits.

- Provide waste certification program maintenance and support, including waste acceptance procedure maintenance, performance indicators, and document control supporting the certification of waste received at SRS T/S/D facilities.

- Provide waste characterization subject matter expertise to review and approve waste stream characterization forms and certification plans, provide dose-to-curie calculation assistance, and to review and approve the periodic waste stream characterization re-validation.

- Provide for the Solid Waste Management Committee as a forum for waste generator input into waste program objectives and implementation strategies.

- Manage the program for Generator Certification Official (GCO) qualifications, curriculum and continuing training. Provide subject matter expertise to review and improve the site-level training and awareness for waste management, including training support for the Environmental Compliance Authorities (ECAs) and waste Cognitive Technical Functions (CTFs).

- Support pre-generation approval requests to DOE-SR for the generation of waste with no identified path for disposal (WWNPD) resulting from priority work scopes. Maintain content and coordinate review of annual review of DOE approval of WWNPD letter.

- Provide in-field SWM Generator Services Point of Contact (POC) support for generator waste management operations required to meet SRS waste acceptance criteria.

- Provide oversight and certification for offsite waste shipments.

- Provide for DOE required forecasting and reporting of newly-generated waste.

- Maintain site procurement specifications for the procurement and inventory maintenance of site-wide used radioactive solid waste packaging, bags, and required packaging filter vents to be paid by the end users.

- SRNS will provide SRR access to the WITS for tracking characterization and movement of LLW and TRU waste for disposal.

- SRNS will provide SRR access to the HMW Tracking (previously named E-14) for tracking characterization and movement of Hazardous/Mixed waste for disposal.

- If requested by SRR, SRNS will request a certificate of disposal/destruction for hazardous and radioactive waste disposed off-site, and these will be provided to SRR or .

- SRNS will provide support for Site radioactive waste programs' maintenance and compliance with DOE Order 435.1.

SRNS and SRR agree to form a working group to address issues related to potential new wastes streams. Any agreements from this working group will be addressed via changes to this appendix or in an SLA as appropriate.

4.6 SRR Waste Generator Certification Support

SRR compliance with the applicable waste acceptance criteria is required for access to SRNS solid waste services. All 1S Manual and 3Q Manual requirements applicable to on-site waste generators shall be met. Some key interface requirements are identified below:

- SRR shall provide GCO(s) to certify waste program compliance with SRS 1S Manual requirements. The GCO shall report and provide oversight that is independent of the line management directly responsible for waste generating operations. SRR shall support the GCO(s) function, as needed, with operations and cognitive technical personnel.

- SRR shall provide for facility access and program support for SWM POC functions, program surveillances and audits to ensure compliance with Manual 1S requirements.

- SRR shall provide support required to package and load for transport any waste that will be direct shipped from the generator that is destined for offsite disposal, e.g. – lab packaging.

- SRR shall provide support for audits/assessments typically consisting of SRNS led surveillances, but may require interface with off-site organizations to support RCRA compliance assessments, Nevada Nuclear Security Site waste program assessments, WIPP certification assessments, etc. SRNS will provide advanced notice, to the extent practical, prior to any required request for assessment support.

- SRR shall provide and maintain a current and out year forecast of new waste generation in accordance with Manual 1S. SRR shall make revisions to forecasted waste in accordance with Manual 1S. Based on forecasted service capacity needs, SRNS will request funding from DOE. SRR will support request to DOE to obtain funding for waste forms not forecasted and planned in existing budgets. If inadequate funding is received, DOE-SR will be asked to work with both parties, as needed, to prioritize capacity usage. NOTE: Out year budgets are developed 1-2 years in advance and forecasts should accommodate this need to the extent practical.

- In accordance with *Manual 1S*, budget-significant corrective actions required of the SRNS due to SRR waste generator non-compliance of waste acceptance and shipping criteria will be reimbursed by the generator, some potential examples include: special radiological performance analysis for T/S/Ds, waste retrieval, repackaging, re-characterization, etc. As required, DOE-SR will arbitrate cost schedules for these corrective actions.

- SRR will provide information and data to SRNS to support DOE and regulatory reporting. Report frequency will be on a periodic basis required to support both SRNS and SRR priorities.

- SRR shall provide for waste characterization services as needed to ensure initial and periodic verification of waste streams.

- SRR shall not generate a solid waste with no identified path to disposal without explicit approval by DOE-SR and concurrence from SRNS.

- SRR agrees to serve on a SRNS/SRR Team to support the on-site electronic shipping and transportation of waste.

4.7 SRS P2 Program

SRNS will provide for a site-level pollution prevention program compliant with applicable regulations and directives as defined per Procedure 6.11, "Pollution Prevention

Program" (Manual 3Q). SRNS provides the following services supporting required waste minimization programs and support for the SRS Pollution Prevention Program:

- SRNS maintains the SRS Pollution Prevention (P2) Program that integrates P2 into the SRS Environmental Management System (EMS) and associated Integrated Safety Management Systems (ISMSs) as a primary strategy to operate and meet operations and closure missions in a compliant, cost-effective manner that protects the environment and safety and health of employees and the public. The SRS P2 Program complies with DOE and regulatory reporting, including performance measures, national and local reporting and monitoring.

- SRNS provides for data collection (P2 activity and accomplishments) and associated reporting consolidation as required to meet DOE-required annual P2 Program performance measurements and reporting.

- SRNS provides waste avoidance program support in accordance with the SRS Pollution Prevention Program.

- SRNS provides for SWM Generator Services POC support and database application to help identify and document waste avoidance opportunities.

- SRNS supports employee P2 awareness and training programs/events and community outreach to promote P2 concepts.

- SRNS will provide access to recycle services to the extent practical. Funding will be on a case-by-case basis.

SRR shall identify and implement cost-effective waste reduction projects/techniques and shall support documentation of pollution prevention program elements to comply with DOE and regulatory agency reporting requirements.

4.8 Interarea Transfer Line (IAL) and High Point Access

The Interarea Line (IAL) is the high level waste transfer system piping that is located underground between F and H Areas in the 643-E Facility (Old Burial Grounds). A "High Point" area on this transfer line is also located within the 643-7E Facility. The "High Point" and IAL are under the cognizance of SRR; however, access to those areas is gained by entering the Burial Grounds which is the responsibility of SRNS SWMF.

The High Point on the IAL consists of a contamination control facility, flush water tank, and pumps. To clearly define the facility boundaries and responsibility zones, the High Point Facility is marked by delineator posts and chains. Facility identification and custodian signs are hung on the chain, identifying SRR Liquid Waste Operations (LWO) as the facility owner.

SRR LWO personnel are responsible for:

- Contacting the SWMF Shift Manager directly at 507-3289 prior to commencing any transfer. Contacting the SWMF Shift Manager should be done during normal working hours prior to commencing a transfer.

- Remaining in radio contact with the SWMF Shift Manager when inside the SWMF controlled areas to include the High Point.

- Maintaining demarcation signs and other facility identification at the High Point, such that facility boundaries and responsibility zones are clearly identified.

- Providing oversight and response to all emergencies, as addressed in Manual 6Q, occurring at the High Point Facility or IAL. The FTF Shift Manager will act as the FEC for any event occurring at the High Point.

- Providing immediate notification to the SWMF Shift Manager, during normal working hours of all emergencies at the High Point, regardless of the nature or severity and informing SWMF management of any off-shift emergencies at the High Point.

- Developing and executing drill scenarios for the High Point that may involve SWMF response.

- Providing oversight of ORPS occurrences or issues within the High Point Facility, including critiques, reporting, and investigations. Note: Exceptions are addressed in Manual 9B.

- Providing support for all Radiological work and incidents at the High Point Facility.

- Responding to incidents (i.e., personnel contamination, leaks, spills, etc.) during weekend surveillance during off-shift hours within SWMF (HP/IAL).

- Providing personnel decontamination.

- Providing work permits for all radiological work at the High Point.

- Returning any borrowed equipment, vehicles, tools, etc., to original location, in same condition as received. (i.e., vehicles cleaned out, gassed, etc.).

- Maintaining the cleanliness, appearance, and safety of the High Point Facility.

- Contacting SWMF Shift Manager to add High Point work scope items to SWMF schedules, when necessary to insure interface communications are maintained.

- Providing oversight of work control activities within the High Point Facility, including work package development and approvals. Also upon arrival at SWMF,

notifying the Shift Manager or delegate of planned work activities prior to entering the facility.

- Notifying SWMF Shift Manager for emergent issues and providing response as requested. Note: If immediate communications are required for emergent issues, the Shift Managers should speak directly. Per EPIP and 2S ConOps practices, all communications involving facility operations (non-emergent and emergent) should go through the Shift Manager.

SRNS Solid Waste Management Facility personnel are responsible for:

- Notifying SRR LWO Manager prior to commencing any encroaching excavation at the IAL (excavation distance should be 6 feet).
- Logging the notification of an interarea transfer in the Shift Manager's logbook when notified by LWO.
- Providing initial response to emergencies occurring at the High Point or IAL with appropriate protective actions.
- Providing prompt radio notification to LWO personnel within SWMF or at the High Point, and the LWO F-Area Tank Farm (FTF) Control Room of emergency conditions occurring within the SWMF and required protective actions to be taken.
- Participating in High Point drills, real and simulated, as required.
- Promptly notifying the LWO personnel of any operating impacts that can affect the High Point (i.e., fires, loss of area power, security, etc.).
- Providing initial RCO coverage for incidents at the High Point until relieved by LWO personnel during normal working hours.
- Serving as custodian of all equipment, vehicles, tools, etc., located within the SWMF and outside the High Point demarcation.
- Granting permission to F-Tank Farm personnel, on a case-by-case basis, to use equipment.
- Providing prompt notification to F Tank Farm Manager of any activity; e.g., environmental restoration closure cap work and culvert replacement that may impact High Point Facility or IAL access or operations.
- Providing oversight of work control activities within the SWMF, excluding the High Point Facility.

SWMF Entry/Training Requirements

SRR LWO personnel are responsible for:

- Following SWMF entry and accountability requirements.
- Scanning into and out of the SWMF accountability system during normal E-Area operating hours. (Note: If the system is down, a sign-in log is available).
- Meeting all radiological entry and work requirements. A standing or job-specific Radiological Work Permit (RWP) will cover F Tank Farm personnel once inside of the High Point Facility.
- Obtaining a radio capable of communicating with the SWMF Shift Manager/Communications Center while within SWMF. Note: The primary radio frequency used within the SWMF is Radio Channel 1.

NOTE: The SWMF perimeter fence is normally locked during off-shift hours. LWO FTF Shift Managers are provided with a key to the perimeter fence. During off-shift hours, the FTF Shift Manager is to ensure all LWO personnel dispatched to SWMF maintain radio communications with the 2F Control Room. The FTF Shift Manager is responsible for the accountability of people dispatched from LWO to SWMF.

SRNS SWMF personnel are responsible for:

- Notifying F Tank Farm personnel regarding any changes pertaining to SWMF entry or exit requirements; i.e., location of personnel monitoring equipment, procedures for access and accountability, etc.

5.0 WELL SAMPLING INTERFACES

SRNS has ownership of groundwater monitoring wells within SRR LWO facilities that are used for CERCLA and other regulatory required groundwater monitoring. SRNS has the responsibility to sample and maintain these wells in accordance with applicable regulations and regulatory agreements. SRR has the responsibility to ensure that the wells are protected and secured from on-going activities within their facilities. All SRNS activities will be coordinated with the appropriate SRR facility and access will be in accordance with SRR direction.

6.0 INTERFACE CONTROL INFORMATION

There are no system boundary interface points (i.e. electrical or liquid systems) for solid waste disposal operations or Area Completion Project work. However, there are four areas of interface that are addressed below.

SRNS shall not commence any encroaching excavation at the IAL (encroaching excavation distance is 6 feet or less) without approval from SRR LWO. SRR LWO shall only access SRNS E-area facilities per interface controls identified above for IAL operations (section 4.8).

Protocol for communications between SRNS and SRR regarding waste shipments or associated issues should be from the Solid Waste Shift Operations Manager or designee to the LWO Waste Program Manager or designee.

Additionally, SRNS shall access SRR LWO area facilities per the interface controls identified for well sampling operations in section 5.0.

This agreement works in conjunction with G-FSP-G-00010 Project Management & Construction Services (PM&CS) Functional Services for the disposition and recycling of the various waste using on-site facilities operated by Construction Services.

7.0 SERVICE UNIT INFORMATION

For SRR, see the Section 6 and Attachment 1 of the MOA (G-MOA-G-00002).

8.0 POINTS OF CONTACT

SRNS: **Ed McNamee (Solid Waste)**

Peyton Northington (Area Completion Projects)

SRR: **Owen Stevens**

9.0 APPROVALS:

SRNS: _____ 9/15/2011
John Gilmour **Date**

_____ 9/19/11
Mary Flora **Date**

SRR: _____ 9/26/11
Patricia Allen **Date**