

Inputs and Assumptions for Revision 20 of the LW System Plan

The targets described in these assumptions are the overall goals of the various facilities. Modeling of the LW system, however, may indicate that the targets are not achievable given the constraints of the updated Salt Waste Processing Facility (SWPF) schedule, limits to funding, or other system constraints.

- **Priorities for Plan Development**

1. Continual safe storage of liquid waste in tanks and vitrified canisters in storage.
2. Risk Reduction through Waste Disposition, i.e., maximize processing of saltcake from old-style tanks with a special focus in meeting FY16 and FY17 Bulk Waste Removal Efforts (BWRE) commitments, match sludge processing to salt processing needs, and minimize the total life cycle. Target date to empty (BWR) old-style tanks by 9/30/2022. Tanks 21-24 are the last four to perform BWRE.
3. Tank Cleaning and Stabilization of Tank 12 by 5/31/2016 and make progress on additional tanks as funding permits.

- **Funding**

- Funding profile to be used for Cases 1 and 2 is as follows:
 - \$446M in FY16
 - \$475M in FY17
 - \$490M in FY18
 - \$500M in FY19
 - \$520M in FY20
 - \$525M/yr beginning in FY21 and escalated 1% thereafter, until the end of the program
- Includes Line Item funding, including assigned contingency, for Saltstone Disposal Units (SDU) beginning with SDU-7
- Includes Line Item funding, including assigned contingency, for a Glass Waste Storage Project (GWSP)
- The following items are not included in the LW contractor funding and will be funded separately: SWPF (project and operation through end of FY21), Landlord Services, Essential Site Services (ESS - Section J), DOE Managed, and pension and legacy cost (e.g., Section J and SLAs)
- No “re-pricing” for site services is realized.

- **Salt Waste Disposition**

- **Actinide Removal Process/Modular CSSX Unit (ARP/MCU)**
 - ARP/MCU will continue processing up to 3 million gallons per year with no major modifications to increase capacity.
 - ARP/MCU operates to ensure the total Interim Salt Treatment curies emplaced in the Saltstone Production Facility (SPF) are within the amount identified in the *SRS-Liquid Waste Disposition Processing Strategy*¹, as amended by letter from

¹ Thomas, S.A., LWO-PIT-2006-00017, *Savannah River Site – Liquid Waste Disposition Processing Strategy*, Revision 0, September 2006

SCDHEC to DOE-SR², and the *Basis for Section 3116 Determination for Salt Waste Disposal at SRS*³

- The total volume of waste may be increased from the present §3116 Basis.
- **Salt Waste Processing Facility Integration, Startup, and Utilization**
 - SWPF becomes available for operations beginning December 3, 2018
 - Required Tank Farms, DWPF, and SPF Modifications (e.g., Salt Disposition Integration [SDI]) for SWPF, through Readiness Assessment (RA), will be complete two months prior to the initiation of the SWPF Operational Readiness Review (ORR)
 - The SWPF nominal maximum capacity is:
 - 4.625 Mgal for the first year of operation
 - 7.2 Mgal/yr for the next two years of operation
 - An SWPF outage is assumed at an appropriate time to perform next generation solvent (NGS) implementation to increase facility capacity to 9.0 million gallons per year
 - Nominally SWPF will produce:
 - ~1.2 gal of Decontaminated Salt Solution (DSS) for SPF for each gallon of feed to SWPF
 - ~0.08 gal of Strip Effluent (SE) for DWPF for each gallon of feed to SWPF
 - ~0.02 gal of monosodium titanate solids/sludge for DWPF for each gallon of feed to SWPF
- Note: when production exceeds 7.2 Mgal/yr, SE will be limited to 576 kgal/yr
- Every effort will be made to optimize the LW System performance to maximize SWPF performance.
- **Sludge Processing**
 - DWPF canisters will maintain a fissile material concentration limit of no more than 897 g/m³ of glass⁴
 - Special discards (including plutonium, neptunium, etc.) directly into sludge batches from H-Canyon will be supported to the extent allowable.
- **DWPF Operations**
 - Modeling will determine the need date for additional glass waste storage (i.e., GWSP), assuming modification of Glass Waste Storage Building#1 to provide maximum additional canister storage capacity via “double-stacking”
 - Shipment of canisters off-site for final disposition is not in the scope of this *Plan*.
- **SPF and Saltstone Disposal Facility (SDF) Operations**
 - SPF capacity will support ARP/MCU, SWPF, and DWPF as necessary
 - Future SDUs will be ~30 Mgal grout capacity single disposal cells.
- **Effluent Treatment Facility (ETF)**
 - ETF capacity will support H-Area and F-Area as necessary.
- **Tank Closures**
 - Types I, II, and IV tanks (Tanks 1–24)
 - Tanks that have complete BWRE may be reused for only:

² K.M. Coleman to D.C. Moody, *Re: SRS Z-Area Saltstone Disposal Facility Permit, Facility ID No. 025500-1603, Aiken County*, August 2011

³ DOE-WD-2005-001, *Basis for Section 3116 Determination for Salt Waste Disposal at the Savannah River Site*, Revision 0, January 2006

⁴ MGR-IO-037, *Fissile Limits in Defense Waste Processing Facility Canisters*, April 2010

- movement of waste from old-style tanks
- storage of other material previously approved by the South Carolina Department of Health and Environmental Controls (SCDHEC) (e.g., Low Temperature Aluminum Dissolution (LTAD) aluminum rich leachate)
Note: reuse of old-style tanks having bulk waste removal effort completed is subject to approval by regulating agencies
- Stabilization of a waste tank (i.e. grouting of primary tank, annulus space, and cooling coils as specified in the applicable Closure Module) subject to available funding
- **Tank Farm Operations**
 - Sufficient tank space volume is assumed to support the receipt of up to 300 kgal per year from H-Canyon operations through 2025 with provision for shutdown flows through 2026 (actual forecast support will be determined by modeling). Special discards (including plutonium, neptunium, etc.) directly into sludge batches from H-Canyon will be supported to the extent allowable and up to 30 kgal per year, through 2026, of low level waste into the Saltstone feed system is assumed.
- **Cases**
 - Case 1 assumes funding and SWPF startup per above
 - Case 2 assumes funding per above with SWPF startup delayed until January 31, 2021
 - Case 3 assumes additional funding with the December 2018 SWPF startup and prioritization of acceleration of F-Tank Farm isolation with a target date of 2030.
 - Use Tank Closure Cesium Removal (TCCR) technology (1Mgal/yr)- 1 unit in each Tank Farm
 - Operate TCCR in old-style tanks up to the time of SWPF startup
 - Add actinide removal through the use of Large Tank Monosodium Titanate Strike to TCCR post SWPF startup
 - Implement NGS in SWPF in the second year of SWPF operations to run with NGS in the third year
 - Work will be prioritized as follows:
 - Empty tanks 9 through 15
 - Empty Old-style tanks in F Area
 - Empty New tanks in F Area
 - Grout F-Area tanks efficiently
 - Empty and grout Tanks 21-24
 - Reuse Tanks 21-24 until H-Tank Farm Type III tanks become available to fulfill their function