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Savannah River Remediation

We do the right thing.

Citizens Advisory Board Waste Management Committee Meeting

Salt Disposition Integration at SRS

October 18, 2011

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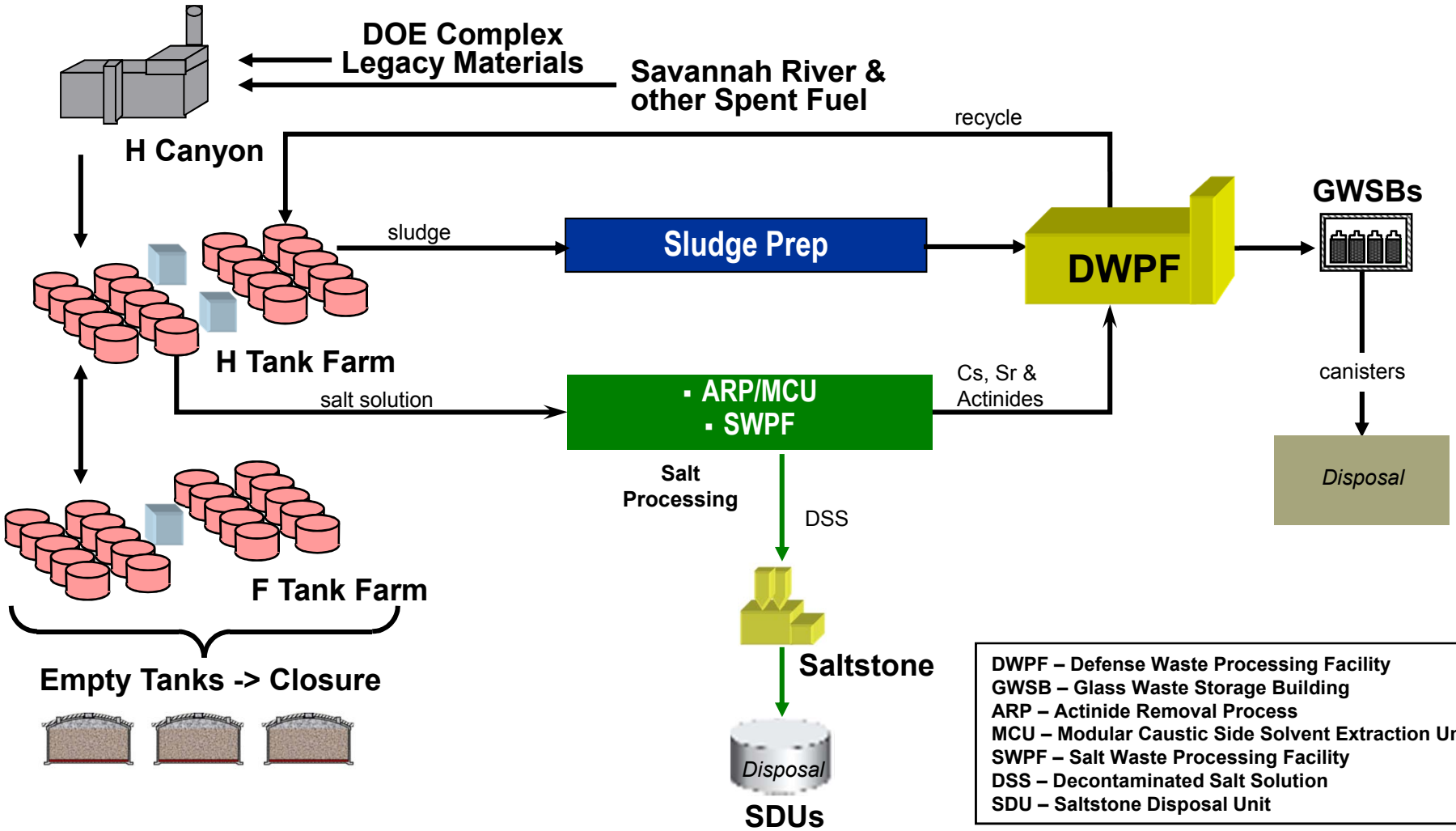
Remediation

Liquid Waste System at SRS



DWPF – Defense Waste Processing Facility
GWSB – Glass Waste Storage Building
ARP – Actinide Removal Process
MCU – Modular Caustic Side Solvent Extraction Unit
SWPF – Salt Waste Processing Facility
DSS – Decontaminated Salt Solution
SDU – Saltstone Disposal Unit

Salt Disposition Integration (SDI) Purpose

- The purpose of SDI is to prepare existing liquid waste facilities for the startup and long-term operation of the Salt Waste Processing Facility (SWPF).
  - Prepare feed for SWPF
  - Receive SWPF effluents

Salt Waste Processing Facility

Tank Farm
Defense Waste Processing Facility
Saltstone Facilities

SDI Mission

- The SDI mission is to align the existing Liquid Waste Program to support startup and long term operations of the Salt Waste Processing Facility (SWPF). These changes include improvements and upgrades within Liquid Waste facilities while preparing the initial feed required for Liquid Waste Operations.
- Funding through the American Recovery and Reinvestment Act (ARRA) allowed SRR to support infrastructure projects for SWPF.

SDI Overview

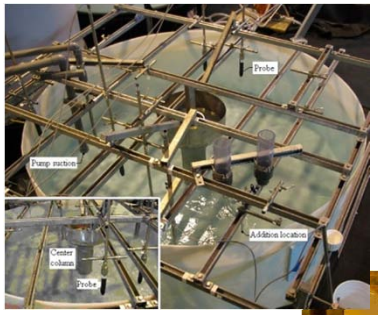
- **The Liquid Waste program at SRS recently completed the following activities in support of Salt Disposition Integration:**
  - Procured four blender pumps to blend salt feed
  - Procured four transfer pumps to feed SWPF
  - Designed transfer lines to/from SWPF
  - Fabricated and installed two 60,000-gallon salt solution receipt tanks at Saltstone Production Facility (SPF)
  - Procured and installed a 9,000-gallon nitrogen tank at Defense Waste Processing Facility (DWPF)
  - Designed and procured engineered equipment for blend and feed tanks and DWPF modifications
  - Designed and built a 30,000-gallon waste concentrate hold tank and cell for the Effluent Treatment Plant (ETP)

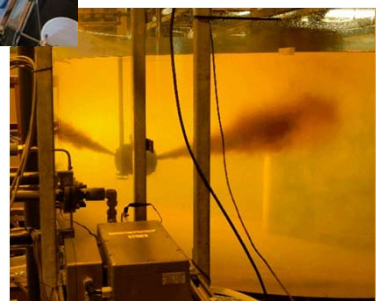
Transfer line piping design

Blend Tank Mixers

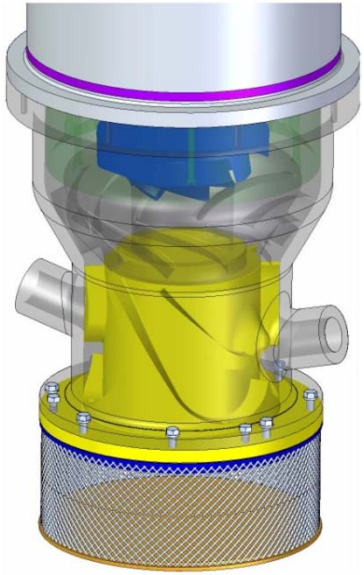
- Salt batches consist of waste from multiple tanks.
- Once wastes are assembled in a blend tank, the contents are blended and the tank is sampled.

- Designed and procured four 35-hp blender pumps for the salt blend tanks, which will blend, adjust, and store salt solutions for feed to SWPF.

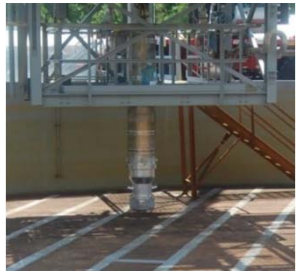




Disturbance testing in pilot scale tank



Submersible blender pump hydraulic assembly model



Submersible blender pump testing

SDI Feed Tanks

- Completed design for SWPF feed tank and procured variable frequency drive and four transfer pumps in support of SWPF operations.
- Salt feed is transferred from H Tank Farm to SWPF through 1 mile of underground piping.

Variable frequency drives

Submersible transfer pump

Blend and feed tanks

SDI Salt Solution Receipt Tanks

- Designed and constructed two 60,000-gallon decontaminated salt solution receipt tanks (SSRTs) at the Saltstone Processing Facility to allow higher throughput receipt (up to 350,000 gallons per week) in support of SWPF operations.

Onsite fabrication of the SSRTs

SSRTs installed at Saltstone

ETP Waste Concentrate Hold Tank

- The Effluent Treatment Plant (ETP) removes low levels of radioactivity and process chemicals from wastewater prior to releasing the discharge to the environment.
- Designed and built a shielded cell, a 30,000-gallon waste concentrate hold tank, and the associated support services for ETP.
- Enables batch transfers of low-level waste directly to the processing and disposal facilities, reducing transfer congestion of the inter-area transfer line (IAL) when SWPF comes online.
- SCDHEC approved the Operating Permit on September 20, 2011.

Construction of the waste concentrate hold tank and dike

DWPF Nitrogen Tank

- Nitrogen protects the facility from the accumulation of flammable vapors.
- Designed, fabricated, and installed a 9,000-gallon nitrogen tank and designed piping tie-in to support processing of higher activity effluent waste from SWPF (up to 60 curies per gallon).

New nitrogen tank installed at DWPF

Nitrogen tank foundation preparation, tank fabrication, and installation

Summary

- The SDI project modified the Liquid Waste systems at SRS to seamlessly integrate with SWPF operations.
- The SDI project supports:
  - SWPF project design, construction startup, and radioactive operations
  - Increased throughput related to SWPF processes
  - Enables batch transfers of low-level waste from the Effluent Treatment Facility directly to processing and disposal facilities
  - Operational closure of waste tanks
- Significant work will continue through FY 2014 in preparation of SWPF startup.