Summary Notes, June 24, 2008
SRS Citizens Advisory Board
Waste Management Committee Meeting

The Savannah River Site (SRS) Citizens Advisory Board (CAB) Waste Management Committee (WMC) met on Tuesday, June 24, 2008, 5:30-7:30 p.m., at the Center for Hydrogen Research – Savannah River Research Campus, in Aiken SC.

The purpose of the meeting was to discuss the Actinide Removal Process / Modular Caustic Side Solvent Extraction Unit (ARP/MCU) Startup and Experience-to-Date; the Waste Disposition Infrastructure Review; the Clean-up Progress – Clearing the Way for the Future; and an opportunity for public comments on CAB related documents.

ATTENDEES:

CAB Members	**Stakeholders**	**DOE/Contractors/Others**
- Joe Ortaldo, Chair	Cherri DeFigh-Price, Parsons	Sheron Smith, DOE-SR
- Art Domby, Vice Chair	Tom Burns, Parsons	Terry Spears, DOE-SR
- Manuel Bettencourt	Kent Fortenberry, Parsons	Soni Blanco, DOE-SR
- Ed Burke	David Roberts, EPA	Wyatt Clark, WSRC
Donna Antonucci	Rob Pope, EPA	Larry Ling, DOE-SR
Leon Chavous	Angela Lindell, SCDHEC	Ron Campbell, WSRC
K. Jayaraman	Ted Millings, SCDHEC	Jean Ridley, DOE-SR
Mary Drye	Bill McDowell, Public	Philip Giles, DOE-SR
Judy Greene-McLeod	Karen Patterson, Public	Paul Daughtery, DOE-SR
	Martha Berry, EPA	Paul Sauerborn, WSRC
	Charlie Hansen, Parsons	Pete Hill, WSRC
	Michael Norton, Parsons	J. D. Chiou, SRNS
	Mark Sautman, DNFSB	Bill Stevens, WSRC
	Roger Seitz, SRNL	Tom Robinson, WSRC
	Murray Riley, Public	Ginger Dickert, WSRC
	Rick McLeod, Advisor	
- *Waste Management Committee Members*		

Welcome and Introduction:
Mr. Joe Ortaldo, Chair, WMC, opened the meeting with a welcome to all; a review of the agenda topics; provided information on the upcoming Emergency Operations Center tour and the Performance Assessment educational forum being offered to the CAB members.

Mr. Ortaldo, WMC Chair, referenced the meeting ground rules and encouraged participation of all attendees. Then, the attendees introduced themselves.

Committee Update:
Mr. Ortaldo reviewed the WMC open and pending recommendations status. He stated that when the DOE-SR response is received to Recommendation #255, then Recommendation #179 will be closed.

Committee Meeting Summary:
Members of the Waste Management Committee (WMC) held a meeting on June 24, 2008, 5:30-7:30 p.m., at the Center for Hydrogen Research - Savannah River Research Campus, Aiken, SC. DOE-SR hosted the meeting, which was well attended by the CAB members and the public.

Committee Meeting Summary: ***(continued)***

Larry Ling and Soni Blanco, DOE-SR, provided informal remarks on the Actinide Removal Project / Modular Caustic Side Solvent Extraction Unit (ARP/MCU) startup and experience-to-date. They stated that the ARP/MCU startup is a significant event because it is the first process to treat salt and will actually make space in the waste tanks to prepare feed for the Salt Waste Processing Facility (SWPF). The ARP/MCU hot operations began smoothly on April 21st, using a step-by-step approach; the equipment is performing as expected; and sample results are tracking as predicted. Through the startup of ARP/MCU testing, training, and procedure development, improvement in preparation and the schedules have been shorten for the SWPF. Monthly meetings are being held with SWPF managers to share lessons learned information. Lessons learned from the ARP/MCU startup and processing will facilitate a quicker and successful startup of the SWPF.

Ms. Blanco stated that since startup, 34,000 gallons of salt has been processed and currently processing batch eight. Joe Ortaldo asked how the process is performing. Ms. Blanco replied that processing is going well, but ten batches must be processed based on predicted values on similar processing to prove operations and that those values are correct to remove cesium and contaminant solutions. Ms. Blanco stated that as we are assured, the batches will be moved more rapidly. Manuel Bettencourt asked how robust the contactors are. Ms. Blanco replied that they have been tested, and are a part practiced maintenance, and that spare contactors are available onsite if needed.

Donna Antonucci, SRS-CAB Chair, expressed appreciation to DOE-SR and WSRC for their efforts. She continued by stating that tank waste is the top issue to resolve at SRS, and she is happy to see the process move forward.

Open discussions related to how much volume of salt will be processed, the process parameters, does the simulant contain alpha waste –no; and when will relief from tank space occur? Ms. Blanco explained that the process will create space, but in the first year, will not make much space available at first, but through moving the salt there is still a small amount of space available. Discussions of what the greatest fear is that would halt or interrupt operations. Ms. Blanco stated that at this time, the chemistry of the waste is the greatest risk, which is being monitored and watched very closely.

Wyatt Clark, WSRC, provided a presentation on the liquid waste operations; the management process; and a budget overview of the liquid waste infrastructure at SRS. He stated that SRS has made investments due to the age of facilities, and relies on a mature process planning and risk management to avoid program impacts on the infrastructure for long-term waste disposition. Open discussions included the need and mitigation of risk management by maintaining spare parts onsite; how is funding and resources redirected when projects are completed, such as the benefits from the Control Room Consolidation Project that transferred site personnel to ARP/MCU Project. Prioritization is extremely important. Mr. Clark stated that it is very important to establish a plan and evaluate risks through analysis and processes to make decisions on the facilities and the liquid waste infrastructure as a whole to continue closure projects and reduce maintenance. Planning is key to budget requests for multiple years, which is very complex, requires working smart, working together, and prioritize work. Manuel Bettencourt asked that if something was identified that could be of catastrophic failure, could funding be obtained. Mr. Clark replied yes, and offered the example that melter and evaporators don't last forever, and would be replaced not only based on breakage but there life expectancy to operate properly. Risk planning is a disciplined approach process. In summary, Mr. Clark stated that preventive program impacts are achieved through continued use of mature process planning and risk management. *(Copy of presentation below)*

Committee Meeting Summary: ***(continued)***

Terry Spears, DOE-SR, provided a presentation on the Clean-up Progress – Clearing the Way for the Future. Mr. Spears began by stating the Environmental Management mission of the liquid waste disposition at SRS is to safely treat and disposition all radioactive liquid waste and solid waste and close all tanks by 2028. As stated by regulators and recognized by the SRS CAB members, "Radioactive waste stored in SRS tanks poses the single greatest environmental risk in the State of South Carolina." Mr. Spears stated that the waste disposition is a challenge, but through technology, capable facilities, and planning the liquid and solid waste will be safely dispositioned. Rick McLeod asked why the ARP/MCU and SWPF would not be processing simultaneously. Mr. Spears explained that they are not needed simultaneously due to the evaluation of supplemental capacity and that we do not have the infrastructure to operate all at once. ARP/MCU are interim operations until the SWPF can be constructed and begin operations.

Mr. Spears stated that within the next five years, SRS plans to vitrify 800 canisters of high level waste; complete DDA and ARP/MCU interim salt processing; recover tanks 41, 48, and 50 for SWPF feed preparation; recover tank 42 for DWPF feed preparation; complete bulk waste removal for 3 liquid waste tanks; fill Saltstone Vault 4 and construct and fill 3 additional vaults; and support H-Canyon in accomplishing its missions. Open discussions by SRS-CAB members supported the Clean-up Progress; ensured DOE-SR knows that they want the waste dispositioned in a safe and quick manner; and encouraged DOE-SR to keep them informed of progress and challenges. *(copy of presentation below)*

The SRS-CAB is preparing a recommendation for DOE-SR to demonstrate how risks are evaluated for integration of waste disposition infrastructure and the entire liquid waste system at SRS.

Public Comment:
None

Adjourn:
Mr. Ortaldo adjourned the meeting at 7:45 p.m.

Follow-Up Actions:
Forward a copy of Doug Hintze's Baseline Presentation to K. Jayaraman for his information.

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PRESENTATIONS:

Infrastructure Review *(presented by Wyatt Clark)*

Infrastructure Review

Presented to
Citizens Advisory Board
Waste Management Committee

June 24, 2008

Wyatt Clark
Chief Engineer
LWO Engineering
Washington Savannah River Co.

EM Environmental Management
safety ❖ performance ❖ cleanup ❖ closure

SRS

Infrastructure Review

- Overview
- Liquid Waste Operations
- Management Process
- Budget Overview
- Summary

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Overview

- Plant infrastructure
  - Requires investment due to age of facilities
  - Relies on mature process planning and risk management to avoid program impacts
  - Reduced through "closure projects"

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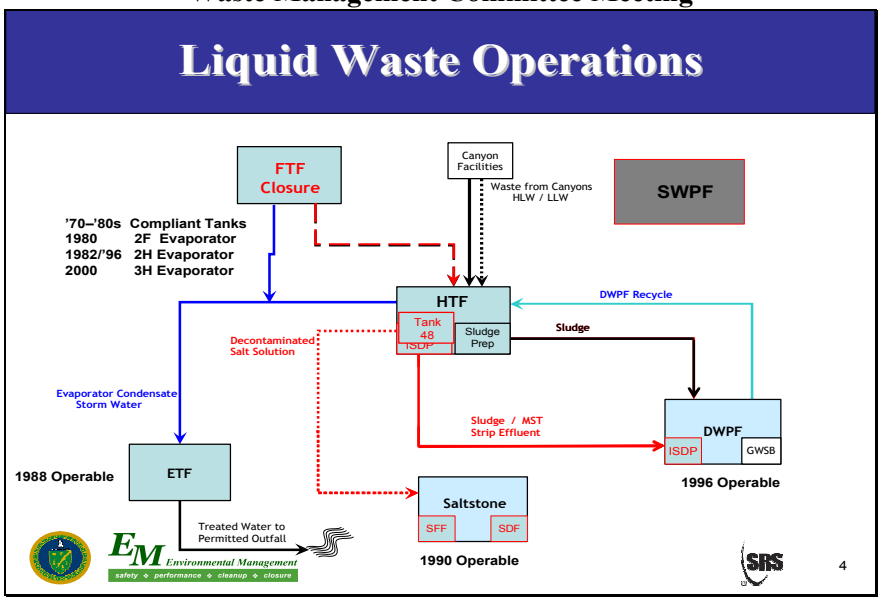
SRS 3


Liquid Waste Operations
FTF Closure
Canyon Facilities
Waste from Canyons HLW / LLW
SWPF
'70–'80s Compliant Tanks
1980 2F Evaporator
1982/'96 2H Evaporator
2000 3H Evaporator
HTF
Tank 48
ISDP
Sludge Prep
DWPF Recycle
Sludge
Decontaminated Salt Solution
Evaporator Condensate Storm Water
Sludge / MST Strip Effluent
DWPF
ISDP
GWSB
1996 Operable
1988 Operable
ETF
Saltstone
SFF
SDF
1990 Operable
Treated Water to Permitted Outfall
Environmental Management
safety performance cleanup closure
SRS
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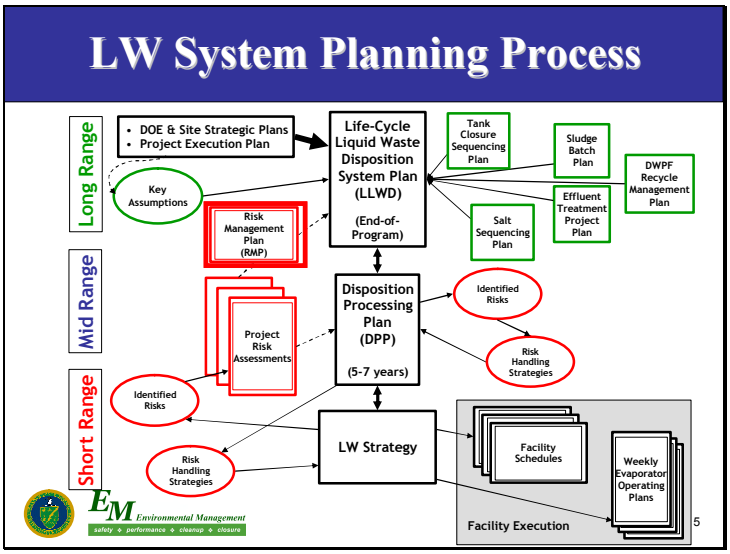
LW System Planning Process
Long Range
Mid Range
Short Range
DOE & Site Strategic Plans
Project Execution Plan
Key Assumptions
Risk Management Plan (RMP)
Life-Cycle Liquid Waste Disposition System Plan (LLWD)
(End-of-Program)
Tank Closure Sequencing Plan
Sludge Batch Plan
DWPF Recycle Management Plan
Effluent Treatment Project Plan
Salt Sequencing Plan
Disposition Processing Plan (DPP)
(5-7 years)
Identified Risks
Risk Handling Strategies
Project Risk Assessments
Identified Risks
Risk Handling Strategies
LW Strategy
Facility Schedules
Weekly Evaporator Operating Plans
Facility Execution
Environmental Management
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Approach to Risk Management

- Risk Planning – Disciplined approach
- Assessment – Major risk categories include:
  - Tank Space
  - Equipment Failures
  - Technology
  - Process Performance
  - Project Integration
  - External Coordination
  - Capture emergent risks into Risk Register
- Integration with Planning
- Dealing with Residual Risk

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Typical Risk Assessment

Event: Tank Farm Equipment Failure

Handling Actions

- Establish and monitor system health
- Implement requirements of system health reviews
- Identify & procure critical spares

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Funding Perspective

- 1996 – 2002
  - Facility operations stable
  - 3H evaporator startup
  - Tank Farm Services (FTF / HTF west)
- 2003 – 2008
  - Active waste removal / transfers
  - Infrastructure investments minimal (risk driven)
  - Operational projects focus (ISDP)
- 2008 – 2012
  - Closure project focus (project addresses infrastructure)
  - Active waste removal / transfers / treatment
  - Infrastructure focus to support SWPF integration
  - Life Extension program focuses long range planning

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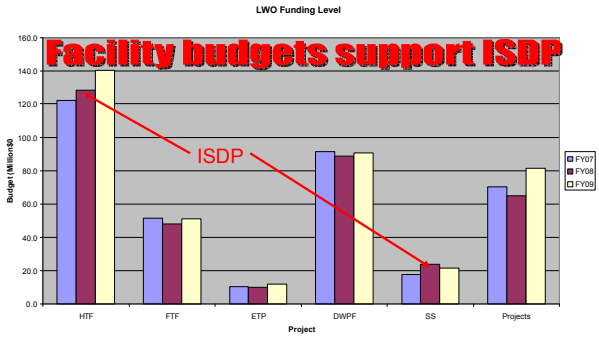
Facility / Project Funding



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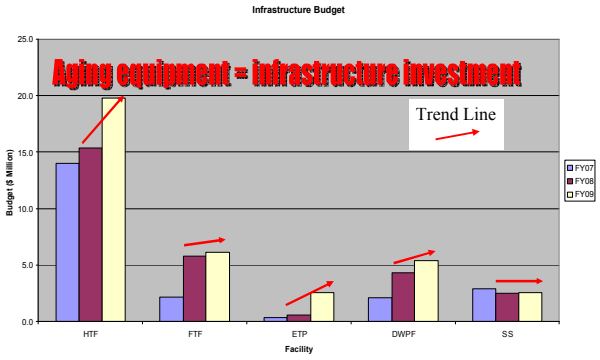
SRS 9

Infrastructure Investment



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Major FY 09 Infrastructure Activities

- **HTF**
  - Slurry Pumps (40)
  - East Hill Steam / Air permanent modification
  - 2H Evaporator Controller Replacements
- **DWPF**
  - Transfer pumps
  - Ventilation / Building repairs
  - PLC availability
- **Saltstone**
  - Admix / Power permanent modifications
  - Plant air drier
  - Hopper cameras / flushing improvements
- **ETF**
  - Basin reline
  - H12 Outfall
  - Fire system upgrade
- **FTF**
  - 2F Evaporator steam / condensate
  - Cooling Tower Nalco system permanent modification
  - Annulus Preheaters
  - Process water supply (F Area)

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Summary

- Prevent program impacts through continued use of mature
  - Process Planning
  - Risk Management
- Utilize system health monitoring (including "Life Extension" teams) to systematically approach long range investment (expect investments to trend up)
- Continue "closure projects" to reduce infrastructure maintenance

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Acronyms

- HTF –H Tank Farm
- FTF – F Tank Farm
- ETF – Effluent Treatment Facility
- DWPF – Defense Waste Processing Facility
- HLW – High Level Waste
- LLW – Low Level Waste
- ISDP – Interim Salt Disposition Project
- SWPF – Salt Waste Processing Facility
- GWSB – Glass Waste Storage Building
- SFF – Saltstone Feed Facility
- SDF – Saltstone Disposal Facility

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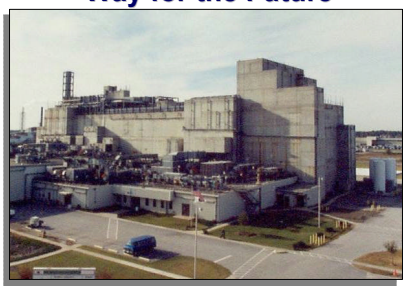
Clean-up Progress – Clearing the Way for the Future *(presented by Terry Spears)*

Savannah River Site Waste Disposition Project

Clean-up Progress – Clearing the Way for the Future



Terrel J. Spears, Assistant Manager for Waste Disposition Project
DOE - Savannah River Operations Office

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Liquid Waste Disposition - Mission

Radioactive Liquid Waste - Tank Waste Stabilization and Disposition

- Safely treat and disposition 36 million gallons of radioactive liquid waste and close 49 underground storage tanks in which the waste now resides by 2028 to reduce risk and meet regulatory commitments

Solid Waste – Stabilization and Disposition

- Treat, store, transport, and dispose of transuranic (TRU), hazardous (HW), mixed (LLMW), low-level (LLW), and sanitary wastes generated at SRS throughout the Environmental Management mission

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Radioactive Liquid Waste Disposition

"Radioactive waste stored in SRS tanks poses the single greatest environmental risk in the State of South Carolina."

Challenge:

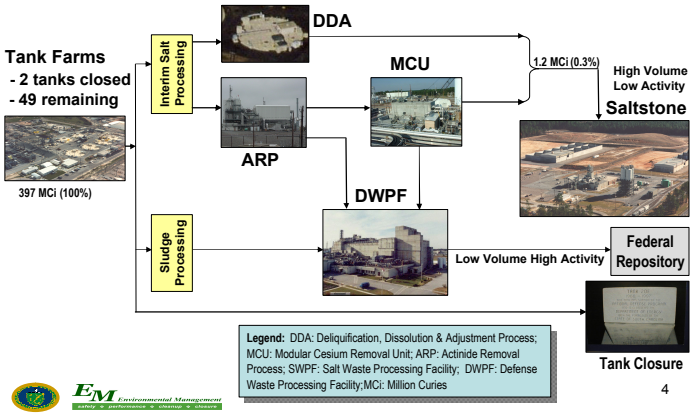
- Safely store, treat and stabilize legacy liquid waste
- Remove waste and close 49 remaining waste tanks

Regulatory Framework

- Federal Facility Agreement (FFA) – Close all noncompliant tanks by Fiscal Year (FY) 2022
- Site Treatment Plan (STP) – remove waste from all tanks by FY 2028
- Tank Closure and waste disposition must meet Section 3116(a) of the Ronald W. Reagan National Defense Authorization Act for FY 2005
- Facilities operated under State-issued permits
- Total radioactivity sent to Saltstone vaults limited to 1.4 million (M) Curies (Ci)

3

Liquid Waste Processing – 2008



Legend: DDA: Deliquification, Dissolution & Adjustment Process; MCU: Modular Cesium Removal Unit; ARP: Actinide Removal Process; SWPF: Salt Waste Processing Facility; DWPF: Defense Waste Processing Facility;MCi: Million Curies

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Liquid Waste Processing – Next Five Years

- Vitrify over 800 canisters of high level waste (3,400 total)
- Complete DDA and ARP/MCU interim salt processing
- Recover Tanks 41, 48, and 50 for SWPF feed preparation
- Recover Tank 42 for DWPF feed preparation
- Prepare feed for SWPF operations
- Complete bulk waste removal for 3 liquid waste tanks
- Complete closure of 2 liquid waste tanks
- Fill Saltstone Vault 4 and construct and fill 3 additional Saltstone Vaults
- Support H-Canyon in accomplishing its missions

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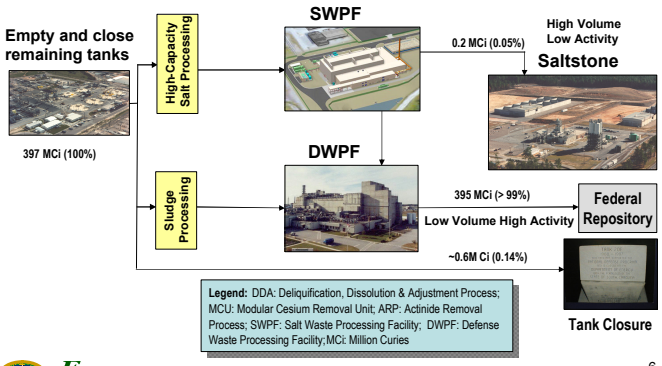
Liquid Waste Processing – 2013



Legend: DDA: Deliquification, Dissolution & Adjustment Process; MCU: Modular Cesium Removal Unit; ARP: Actinide Removal Process; SWPF: Salt Waste Processing Facility; DWPF: Defense Waste Processing Facility;MCi: Million Curies

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Liquid Waste Processing – Five to Ten Year Horizon

- Vitrify an additional 1,100 canisters of high level waste (4,500 total)
- Start shipping DWPF canisters to the Federal Repository
- Start-up and operate SWPF to rapidly treat and disposition salt waste
- Construct and fill 12 additional Saltstone Vaults
- Complete bulk waste removal for 13 additional non-compliant liquid waste tanks
- Complete closure of 6 additional non-compliant liquid waste tanks
- Closure of F-Tank Farm well underway
- Continue to support H-Canyon in accomplishing its missions

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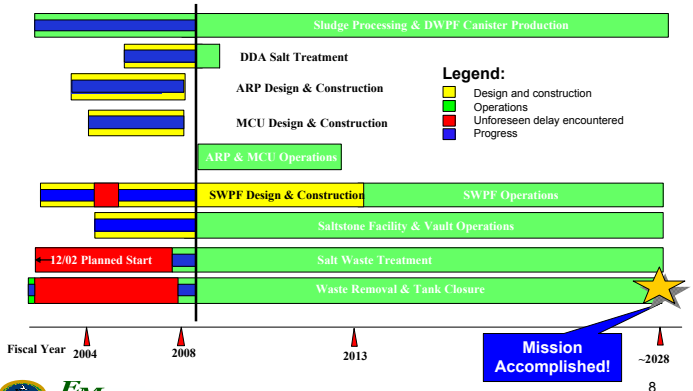
Liquid Waste Project Schedule



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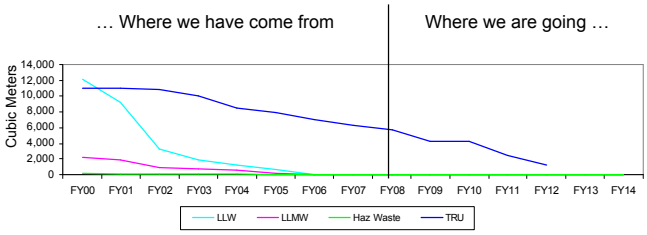
Legacy Solid Waste Inventory



- Legacy LLW, LLMW and HW dispositioned
- Legacy drummed TRU Waste will complete in 2009
- Legacy boxed TRU Waste disposition will complete by 2016

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Continuing Challenges

- **Radioactive Liquid Waste**
  - Safely operating SRS tank farms
  - Maintaining sufficient tank space for processing
  - Vitrifying and storing waste for final disposition
  - Constructing SWPF
  - Removing waste from old style tanks
  - Recovering Tank 48 for unrestricted use
- **Solid Waste**
  - Identifying disposition pathways for all legacy TRU waste
  - Being vigilant in the generation of future waste to prevent accumulation of stored waste

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Summary

- **The Savannah River Site (SRS) is moving forward with safe treatment, stabilization and disposal of liquid and solid legacy wastes**
- **Strategies are in place for completion of solid waste mission by 2016 and liquid waste mission by 2028**
- **SRS appreciates and values the input and involvement of the SRS Citizens Advisory Board and stakeholders in effectively meeting the challenges still before us**

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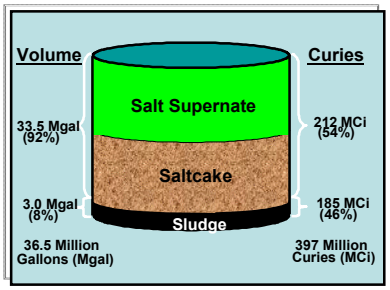
Liquid Waste Background

Facts…

- Two tanks closed
- 49 tanks remaining to close
  - Aging, carbon steel
  - 27 compliant, 22 noncompliant
  - 12 have known leak sites
- Contain half of the radioactivity in the DOE complex
- 1.3 million gallons remaining usable space



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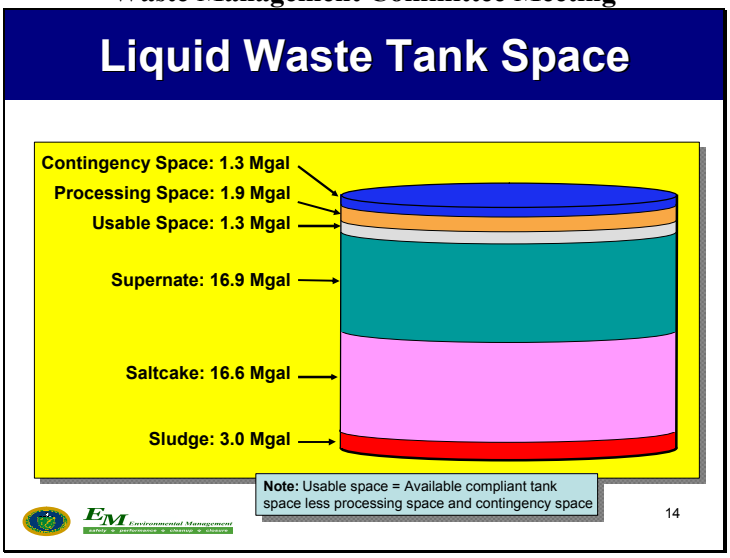
Liquid Waste Tank Space
Contingency Space: 1.3 Mgal
Processing Space: 1.9 Mgal
Usable Space: 1.3 Mgal
Supernate: 16.9 Mgal
Saltcake: 16.6 Mgal
Sludge: 3.0 Mgal
Note: Usable space = Available compliant tank space less processing space and contingency space
14