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Z Area Salt Disposal Facility Update

Presentation to the Citizens Advisory Board

September 23, 2014

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Purpose

- **Savannah River Site's (SRS) Z Area Saltstone Facility**
  - Status of Saltstone Disposal Facility Vault 4
  - Low-level radioactive contamination at Storm Water Outfall Z-01

- **Actions Savannah River Remediation (SRR) has and is taking to address these issues**

Saltstone Disposal Facility

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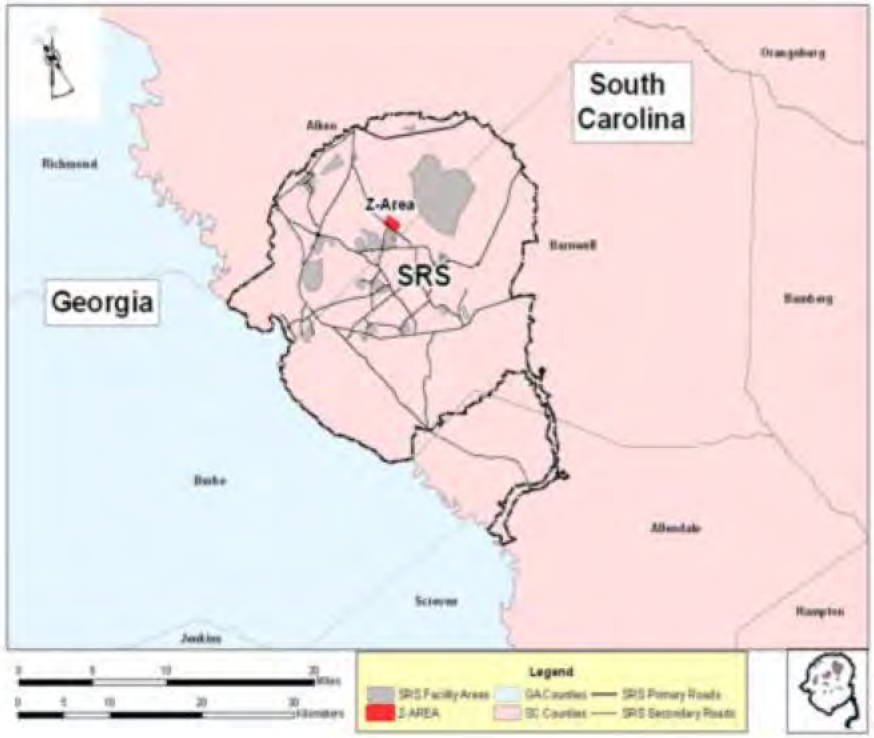

Location of Saltstone Disposal Facility at SRS

Saltstone Disposal Facility (SDF)

Vault 4 Water Intrusion

- Cracks in Vault 4 roof allowed rainwater to migrate into the vault
- Liquid collected in the narrow annular space between the grout waste form and the vault wall
- Contaminated liquid could weep through construction joints or cracks that existed in the vault wall

Existing Vault 4 Contamination Controls

- **Prevent Rainwater Intrusion into Vault (Roof Coatings, Sealants)**
- **Control Rainwater Flow Path**
  - Gutters on roof and weather enclosures
  - Grading to route rainwater to retention basin
- **Fix Wall Contamination**
- **Manage Drain Water Levels Inside Vault**
  - Drain water return system
  - Manage cell water level below hut level to prevent release of contamination to environment
- **Containment**
  - Weather enclosures up to 8'
  - Troughs to collect leakage
  - Isolate from rainwater
  - Installed Megamix coating on walls
  - Installed Xypex coating on walls

Vault 4 Stabilization

- **Last Vault 4 disposal operation in 2012**
  - Current disposal operations utilize new design cylindrical SDUs
- **Several alternatives were evaluated to:**
  - Eliminate rainwater infiltration to Vault 4
  - Mitigate worker and environmental risks
- **Alternative selected:**
  - Pour minimum "clean cap" to Vault 4 cells as necessary to establish roof dose rate <5 mrem/hr for worker exposure control
  - Install elastomeric roof covering on cells D, E, F, J, K, and L
    - Cells A, B, C, G, H, and I are already coated/sealed
  - Continue maintenance on roof and weather enclosures
  - Continue to manage drain water levels

Vault 4 Stabilization Project Status

- **SRR and DOE are committed to Vault 4 Stabilization Plan**
  - Project fully funded and significantly ahead of schedule
- **Project scheduled to clean cap and apply elastomeric roof coating to three cells in FY14**
  - Clean capping is complete on five cells (J, K, L, D, and E)
  - Roof coating is complete on four cells (J, K, L, and D)
  - Roof coating of cell E in progress
- **Capping and coating of remaining cells planned to complete by February 2015**

Z Area Retention Basin Contamination

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Rainwater carried contamination from Vaults 1 and 4 area to the Storm Water drain line

- Drain line flows to Basin No. 4

Basin No. 4 only discharges if level reaches the height of spillway

- Feb 2013 first observed basin discharge

Spillway from Basin No. 4 flows to Storm Water Outfall Z-01

- Low-level contamination deposited

Storm Water Outfall Z-01 flows to McQueen's Branch

- Sedimentation breaks installed to minimize contamination spread

Z Area Storm Water Outfall

- **Sedimentation basin expanded to 100-year storm event size**
  - Increases volume from 3.3 million to 7.3 million gallons
  - Project completed in September 2014
- **Storm Water Outfall**
  - Completed work to excavate spots of contaminated soil in accordance with DOE Order 458.1 and consistent with the SDF Solid Waste Permit
- **Radioactive effluent monitoring at Outfall and McQueen's Branch continues with no increases detected (sampled when liquid present)**

Backup Slides

SDU Major Lessons Learned

- **Utilize commercial drinking/waste water storage tank design principles**
  - Common throughout the US
  - Very successful track record
- **Designed to withstand large hydrostatic pressures due to cylindrical design**
  - Reinforced concrete design using both vertical and horizontal post tensioning
  - Increased strength and durability
- **Improved interior coating**
- **Leak tested as part of construction**
- **Roof is sloped to shed rain water**
- **Improved drain water collection and return system**