

Defense Waste Processing Facility Recycle Wastewater Environmental Assessment A Waste Stream Proposed for Evaluation under DOE's High-Level Radioactive Waste (HLW) Interpretation

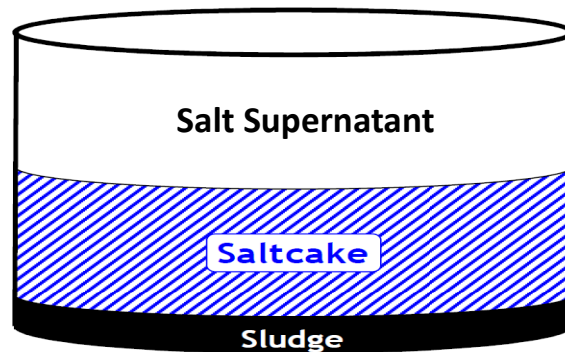
Department of Energy

Informational Internet Webinar – December 19, 2019

- Draft Environmental Assessment (EA) issued December 10, 2019 (84 FR 26847).
 - Public comment period through January 9, 2020.
 - DOE conducted an informational meeting on December 17th providing an overview of the Draft EA.
- Draft EA evaluates the proposed action and alternatives for treatment and disposal of up to 10,000 gallons of Savannah River Site (SRS) Defense Waste Processing Facility (DWPF) recycle wastewater at a licensed commercial low-level radioactive waste (LLW) disposal facility.
- Following public comment, DOE will issue:
 - Final EA that includes consideration of public comments and any changes made to the Draft EA; and
 - Either a Finding of No Significant Impact (FONSI) or a determination to prepare an Environmental Impact Statement (EIS).
- DWPF recycle wastewater is the first National Environmental Policy Act (NEPA) evaluation for a proposed action applying DOE's high-level radioactive waste (HLW) interpretation.

Where Did This Waste Come From?

- Over the years, a primary SRS mission has been the production of special radioactive isotopes to support national defense programs.
- As a result, SRS generated large quantities of liquid radioactive waste.
 - This waste was placed into underground storage tanks
 - Waste is in three physical forms: sludge, saltcake, and salt supernatant.

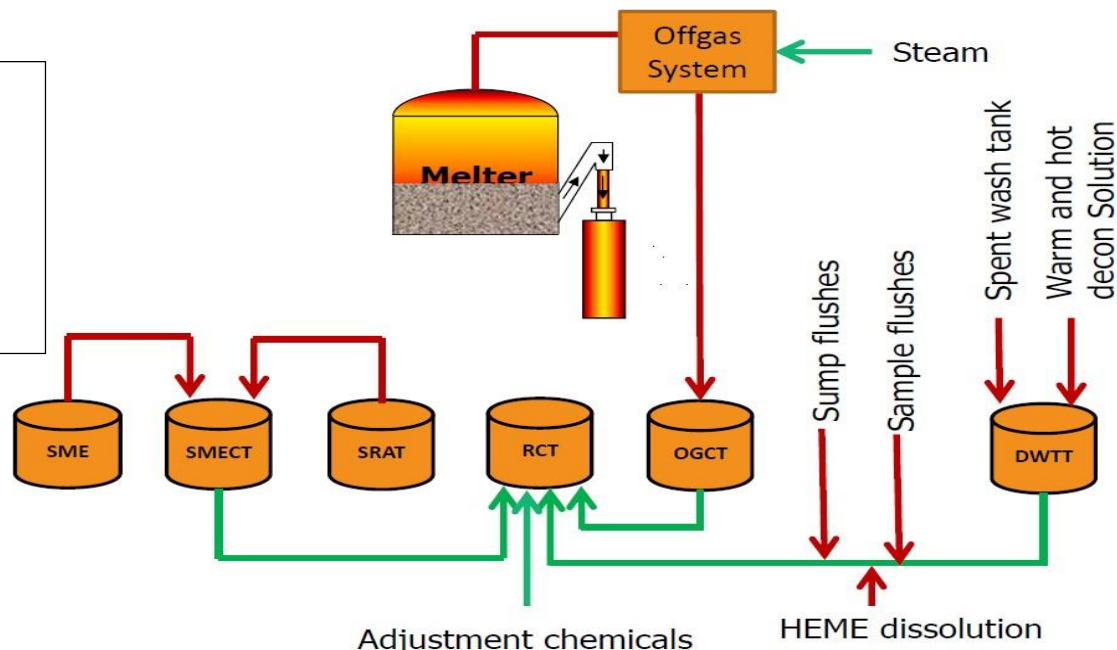


- The sludge portion along with high activity constituents from the salt stream are being transferred to the on-site DWPF for vitrification into borosilicate glass to immobilize radioactive constituents.

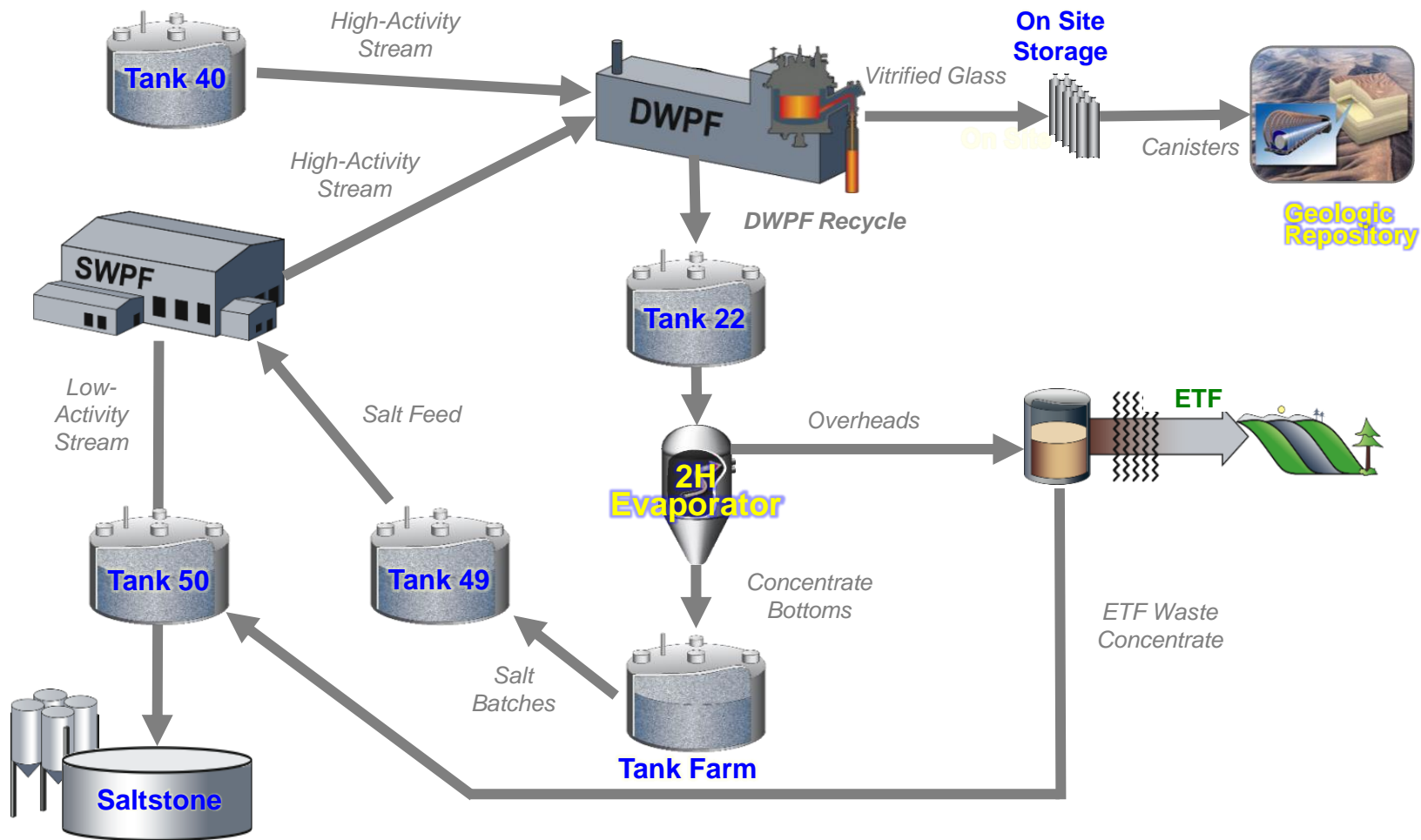
Where Did This Waste Come From (cont'd)?

- DWPF recycle wastewater is generated during vitrification of tank sludge.
 - It is a combination of several dilute waste streams consisting primarily of condensates from high-temperature sludge vitrification processes.
 - Other components include process samples, sample line flushes, sump flushes, and cleaning solutions.

DWTT: Decontamination Waste Treatment Tank
 HEME: High Efficiency Mist Eliminator
 OGCT: Off Gas Condensate Tank
 RCT: Recycle Collection Tank
 SME: Slurry Mix Evaporator
 SMECT: Slurry Mix Evaporator Condensate Tank
 SRAT: Sludge Receipt and Adjustment Tank



- Currently, the DWPF recycle wastewater is returned to Tank 22 for volume reduction by evaporation (2H evaporator), or is beneficially reused in saltcake dissolution or sludge washing.



NEPA Process



- **Proposed Action:**

- Analyze capabilities for alternative treatment and disposal options for up to 10,000 gallons of DWPF recycle wastewater through the use of existing, licensed, commercial LLW treatment and disposal facilities located outside of South Carolina.

- **Purpose and Need:**

- Analyze capability to stabilize and dispose of this waste stream at licensed commercial LLW facilities.
- Inform DOE's planning efforts for later stages of tank closure (2031-2034) when facilities and systems currently used for reuse and management of DWPF recycle wastewater may no longer be operational to address residual volumes.
- DOE would conduct additional NEPA analysis if more than 10,000 gallons of DWPF recycle wastewater is proposed for disposal at a licensed commercial LLW disposal facility.

Alternatives

- DOE has developed three alternatives for accomplishing this Proposed Action:
 - **Alternative 1** would deploy a treatment capability at SRS to stabilize (grout) up to 10,000 gallons of DWPF recycle wastewater and then transport the grouted waste form to a licensed commercial LLW disposal facility.
 - **Alternative 2** would transport up to 10,000 gallons of DWPF recycle wastewater to a licensed commercial LLW disposal facility with the capability to stabilize and dispose of the final waste form.
 - **Alternative 3** would transport up to 10,000 gallons of DWPF recycle wastewater to a permitted and/or licensed commercial LLW treatment facility with the capability to stabilize the liquid into a grouted waste form, and then transport the final waste form to a licensed commercial LLW disposal facility.
 - As required by 10 CFR 1021.321(c), *Requirements for Environmental Assessments*, a No-Action Alternative is also evaluated.

Draft Results

- Potential environmental impacts for all three alternatives would be expected to be minor.
 - No ground disturbance or routine releases of radiological or hazardous materials.
 - Minor impacts to air quality, human health (under the following scenarios: normal operations, accidents, and intentional destructive acts), and waste management.
 - Transportation (assumes 9 to 30 truck shipments)
 - Potential (but low probability) for non-radiological fatalities during a truck accident.
 - For Alternatives 2 and 3 (liquid waste shipments), under potential severe accident conditions and conservative assumptions, potential for latent cancer fatalities from radiological exposure but probability of occurrence is extremely small.
 - Assumed waste disposal volumes would not exceed capacities of the Waste Control Specialists (WCS) or EnergySolutions LLW disposal facilities.
 - Resource areas considered but eliminated from detailed analysis: land; visual; geology and soils; water resources; cultural and paleontological; ecological; noise; socioeconomics; environmental justice; infrastructure and utilities; and industrial safety.
 - Minor incremental cumulative impacts.

Proposed Evaluation under DOE's HLW Interpretation

- DWPF recycle wastewater is currently managed as HLW because it has radionuclides from reprocessing waste as a result of DWPF operations or storage in tanks that contain residual quantities of reprocessing waste.
- Under DOE's Proposed Action, DOE would evaluate whether the stabilized wastewater could be disposed of at a licensed commercial LLW disposal facility as non-HLW under DOE's HLW interpretation.
- DOE's HLW interpretation, as published in its Supplemental Notice on June 10, 2019 (84 FR 26835), intends to facilitate the safe disposal of defense reprocessing waste if the waste meets either of the following two criteria:
 - Does not exceed concentration limits for Class C LLW as set out in 10 CFR 61.55 and meets the performance objectives of a disposal facility, **or**
 - Does not require disposal in a deep geologic repository and meets the performance objectives of a disposal facility as demonstrated through a performance assessment conducted in accordance with applicable requirements.

- Public comment period through January 9, 2020.
 - Please direct written comments on the Draft DWPF SRS Recycle Wastewater EA to:
 - Email: DWPFEA@em.doe.gov. Please submit comments in Microsoft™ Word or PDF file format (as an attachment to the email) or in the email body; please do not use encryption.
 - Mail: James Joyce, U.S. Department of Energy, Office of Environmental Management, EM-4.21, 1000 Independence Avenue, S.W., Washington, DC 20585.
- Issue (1) Final EA in consideration of public comments and any changes made to the Draft EA; and (2) Either a Finding of No Significant Impact or a determination to prepare an Environmental Impact Statement.
- As stated in its Supplemental Notice, DOE will continue its current practice of managing reprocessing wastes as HLW unless and until specific wastes are determined to be non-HLW based on evaluations of waste characteristics and potential disposal options.
- The presentations from the December 17, 2019 informational meeting in Augusta, GA, and the December 19, 2019 informational internet webinar are available at:

<https://www.energy.gov/em/program-scope/high-level-radioactive-waste-hlw-interpretation>