West Valley Demonstration Project
High-Level Waste Management

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DOE High-Level Waste Corporate Board Meeting
Savannah River Site
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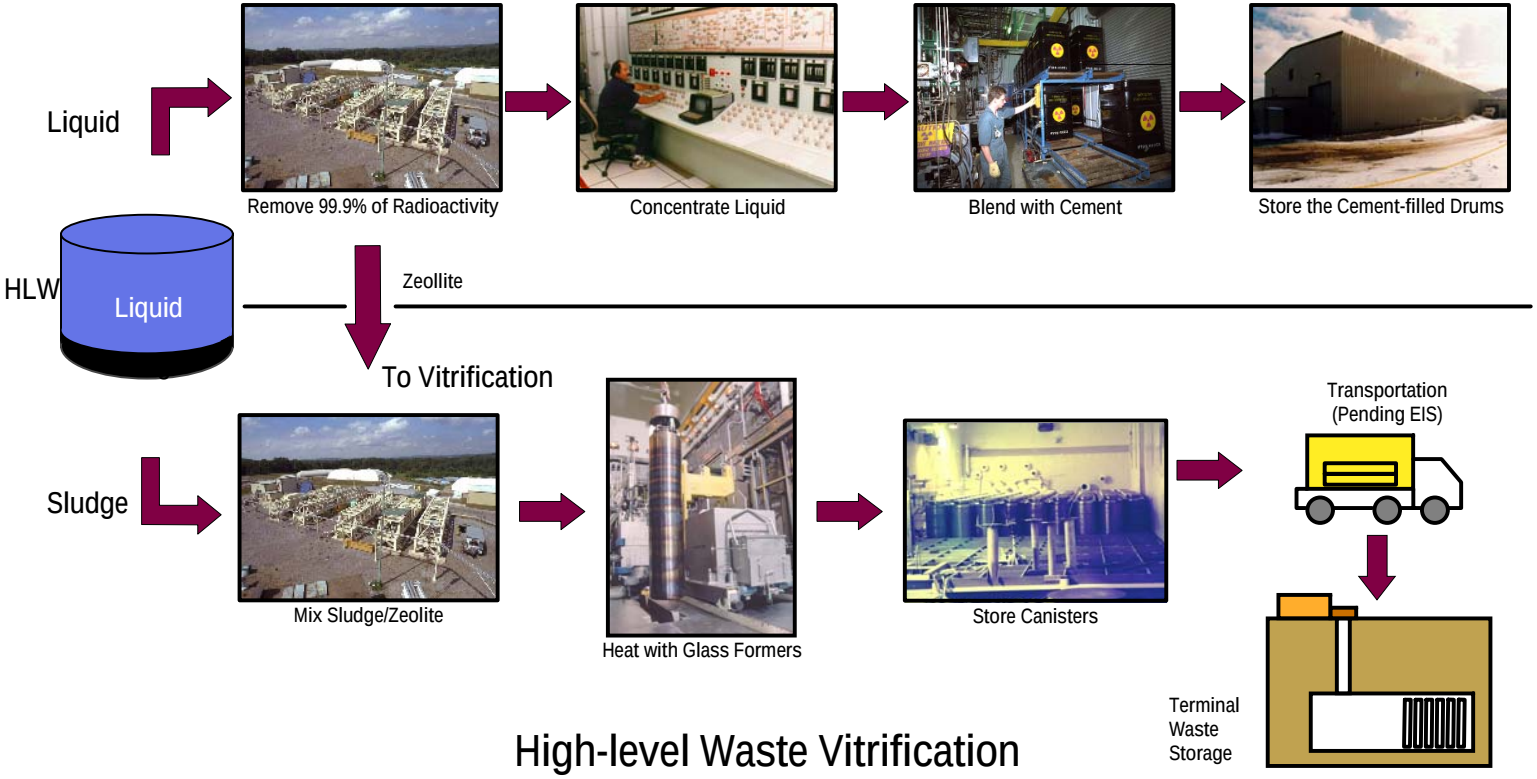
West Valley High-Level Waste

To solidify the radioactive material from approximately 600,000 gallons of high-level radioactive waste into a durable, high-quality glass, both a pretreatment system to remove salts and sulfates from the waste and a vitrification system/process were designed.

Waste Pretreatment



High-level Waste Vitrification

West Valley High-Level Waste

Pretreated LLW Disposal – BIG Success!

1988 – 90 Removal of salts from liquid portion of waste in underground waste tank (8D-2)

1991 – 95 Sludge washing operations to remove salts and sulfates

Total operations processed 1.7M gallons of low-level salt solution into 19,877 drums of cemented LLW that were placed in storage in the Drum Cell

2006 – 07 LLW drums safely removed and successfully shipped to Nevada Test Site for disposal

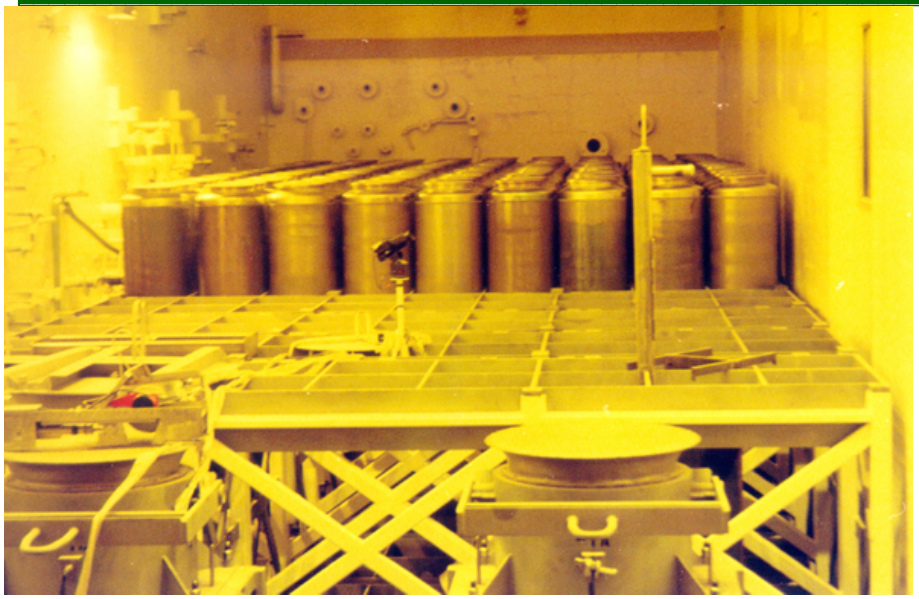
71-gallon drums of cemented waste in storage at the on-site "Drum Cell"

Drums being loaded into rail cars in the "six-pack" formation

Empty Drum Cell

West Valley High-Level Waste

High-Level Waste Processing – BIG Success in Progress!



275 HLW Canisters in Safe Storage in Main Plant Process Building

1996 – 2002 Vitrification "Hot Ops"

Processed 99.6% of sludge activity and 96.5% of Cs-137 activity

Avg. canister fill height < than 90%

Avg. contact dose rate ~2600 R/hr

< than 23M curies processed

2007 – 08 Conversion of Vitrification Facility into remote-handled waste processing area

Future Successes

HLW Tank & Vault Drying

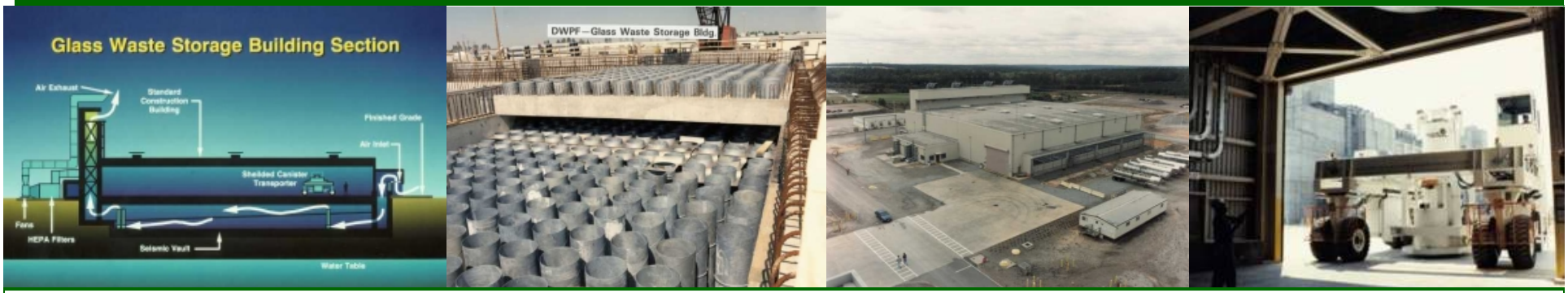
- Contractor tasked with isolating HLW Tanks and placing the Waste Tank Farm in a condition that allows safe and economical surveillance and maintenance
  - Remove residual liquids
  - Reduce or eliminate generation of new radioactive effluents
  - Eliminate and control future corrosion of the tanks

- **Challenges**
  - **NEPA** – Need phased approach to decommissioning
  - **RCRA** – Tanks are regulated units

Future Successes

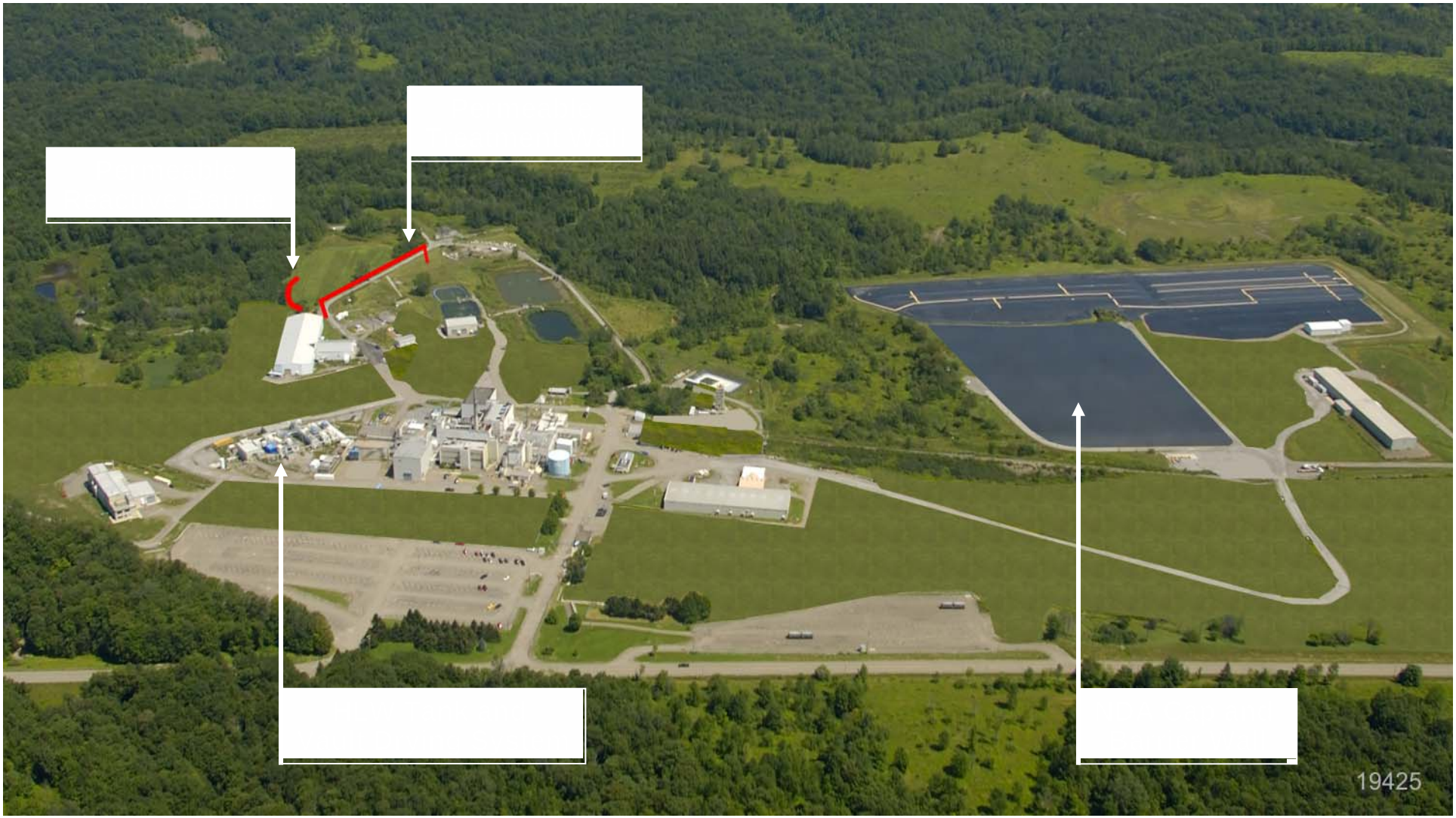
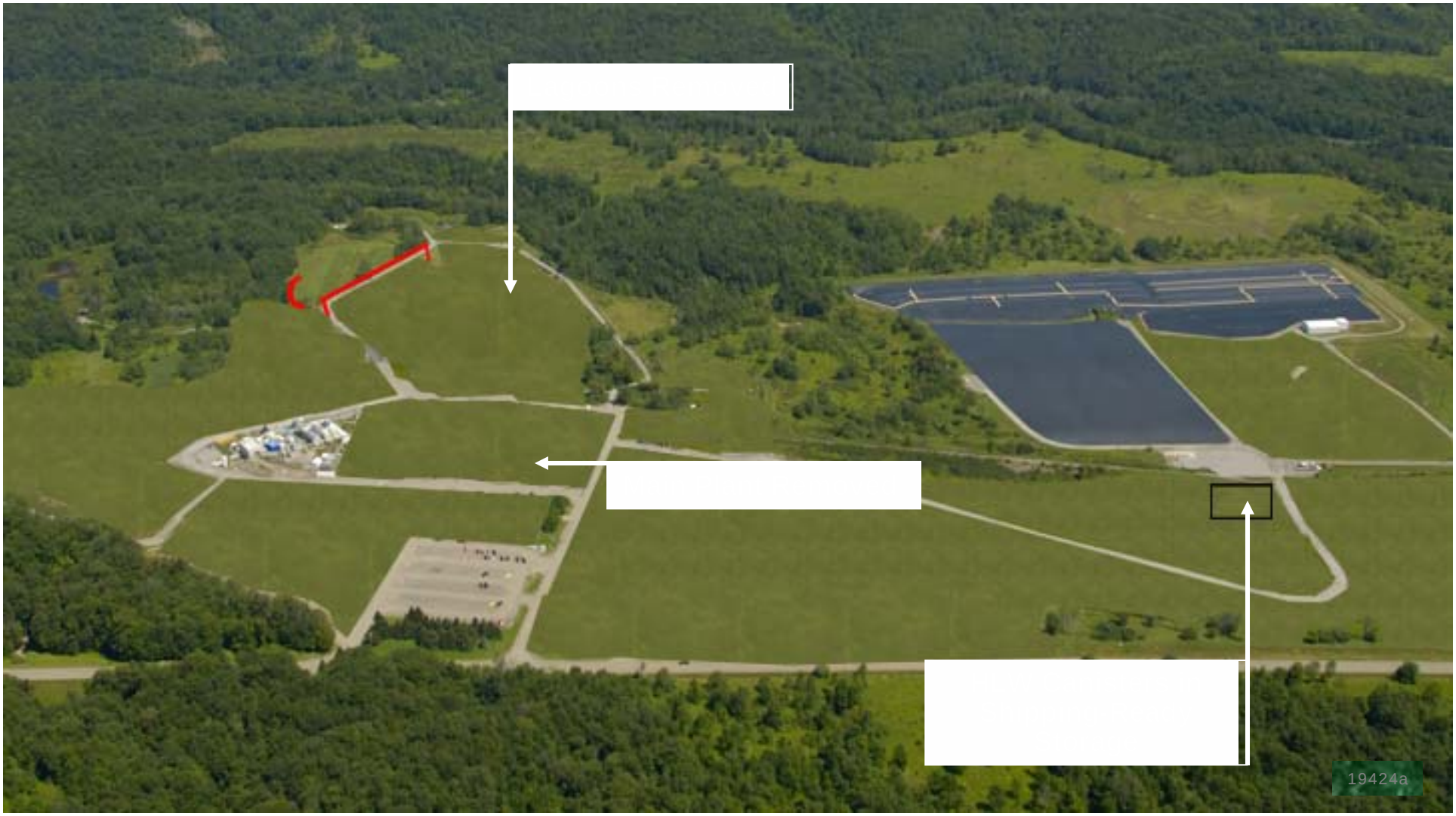
Alternate Canister Storage. **Various commercially available dry storage systems exist with potential applicability for the passive dry storage of WVDP HLW canisters in configurations compatible with eventual transportation and disposal.**

- **Passive storage system**
- **Transportation, Aging and Disposal Canister System concept potentially applicable**
- **Existing commercial designs adaptable for WVDP HLW canisters**
- **One step closer to off-site disposal**



- **New storage facility similar to GWSB#2 at Savannah River Site could also provide interim storage at WVDP**

Interim End State



Phase 1 Implemented