FFRDC Draft Report

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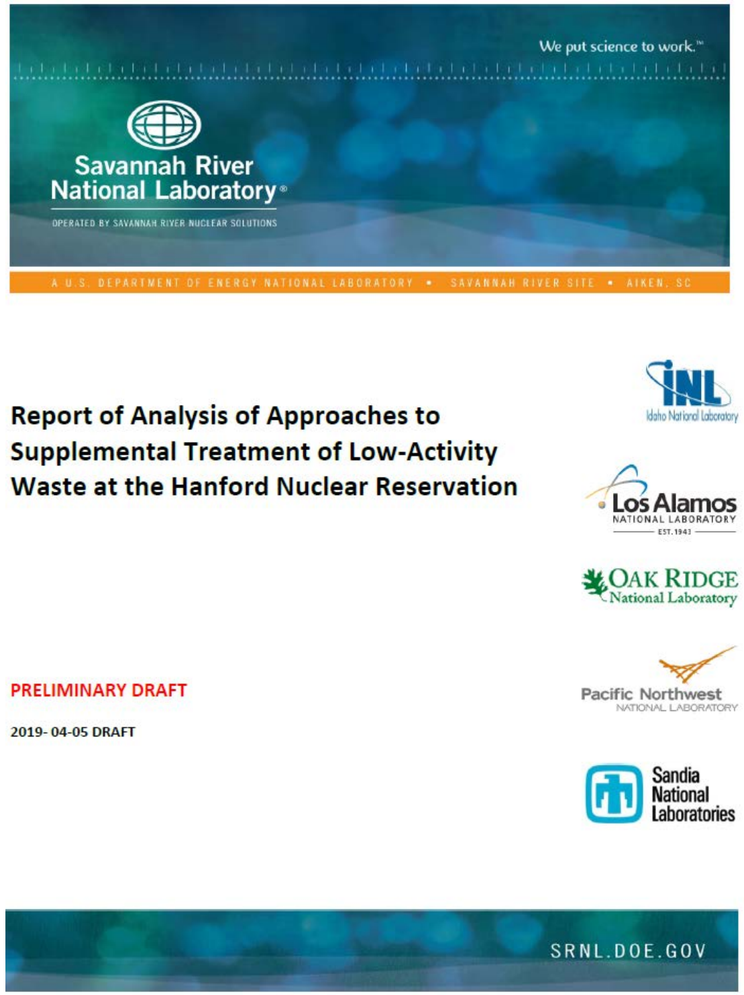
FFRDC Report Context

- Feasibility Study Level
- Potential First Stepping Stone to Changing SLAW Treatment
- Current Priorities:
  - DFLAW Completion and Commissioning
  - HLW Vitrification Plant Restart & Completion
  - Pretreatment for HLW Vitrification
- Stated Report Focus: Current Challenges & FFRDC Analysis



What's New

- Cost of Nearly Complete LAW Vitrification Plant
- WCS as New Candidate Waste Disposal Site
- New High Performance Grout Waste Form Performance Data
- New FBSR Crystalline Ceramic Waste Form Performance Data

Reference Point: Tank Closure and Waste Management EIS (TC&WM EIS)

SLAW Performance Evaluation Results

- **High Performance Grout:** Better than Vitrification Waste Form Performance
- **FBSR:** Better than Vitrification Waste Form Performance
- Results Are Contrary to 30-years of Previous Results
- Ecology Has No Comment on these Results. Ecology Has Not Completed Evaluation of Underlying Studies and Would Need to Complete a Significant Effort Before Concurring with the Data and Results.

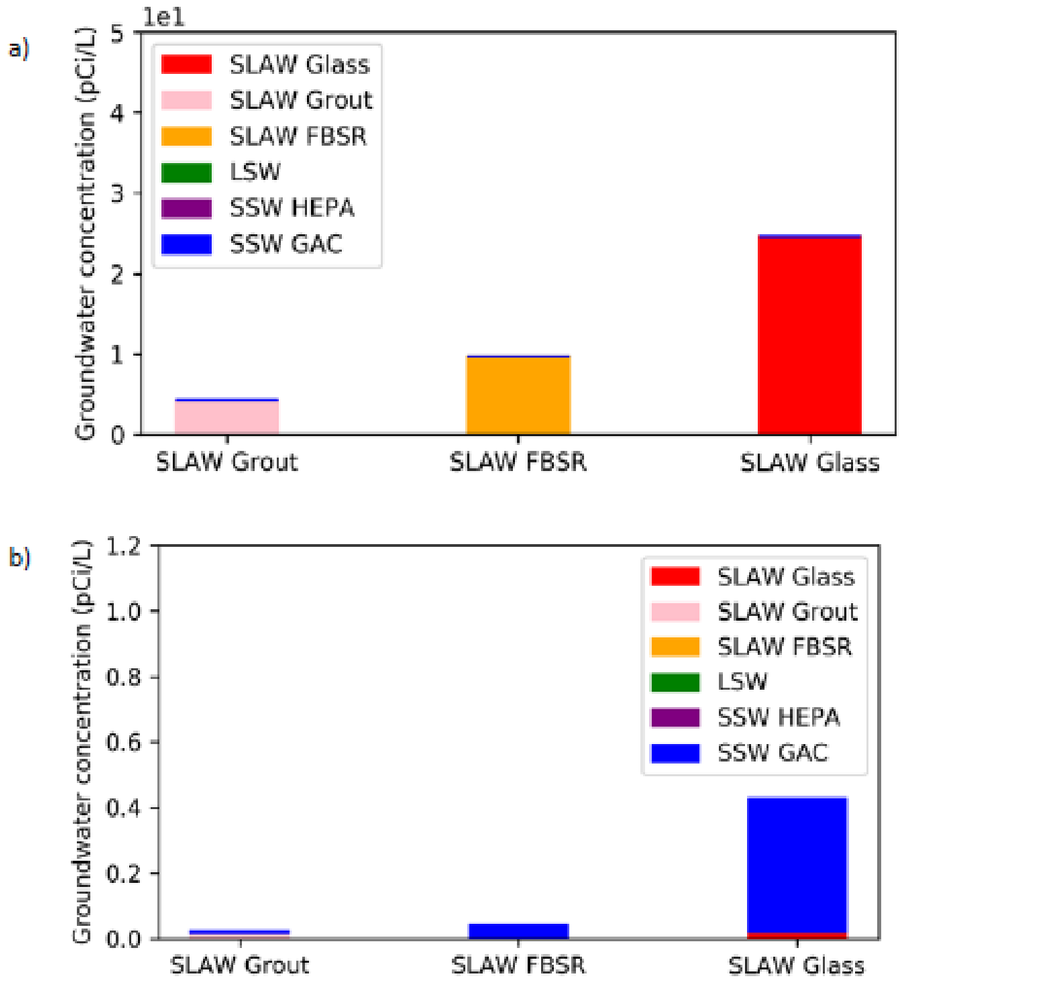


Figure F-16. Best Projected Cases for a) Tc-99 and b) I-129 for all three wasteform systems

Cost Estimates & Budgets

- Cost Estimates:
  - SLAW vitrification option cost
- Budget & Schedule Realities:
  - Current and foreseeable budgeting reality
  - Flat funding schedule impacts

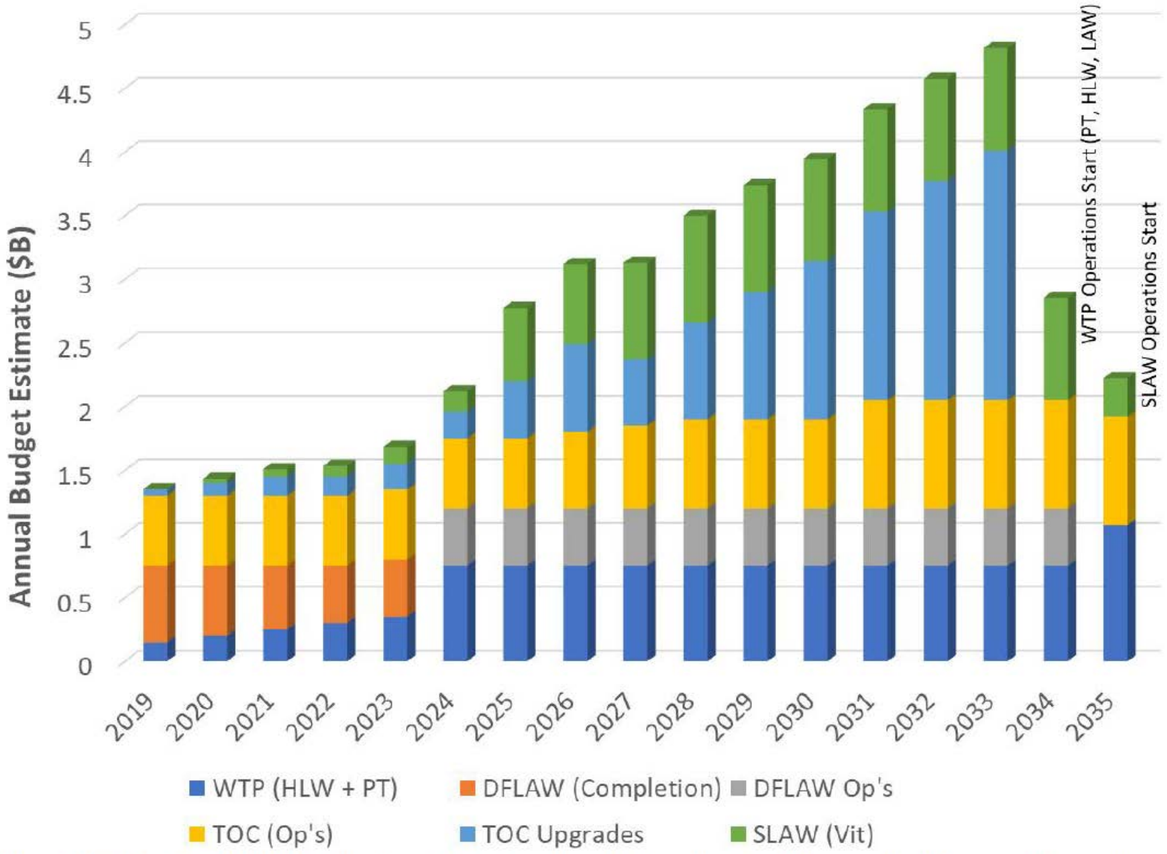


Figure 1 Budget for SLAW Vitrification in Conjunction with Key Hanford Mission Facilities and Operations

Waste Control Specialist Disposal Option

- Mitigation of grout and FBSR risk
- Test Bed Initiative

Figure F-17 Aerial View of Radioactive Waste Disposal Facilities at WCS

Fluidized Bed Steam Reforming

- Crystalline Ceramic Waste Form
- Verficiation of long term durability and performance
- Technology Readiness and the Need for Pilot Scale Operations
- Offgas Treatment System and Associated Secondary Solid Waste Generation

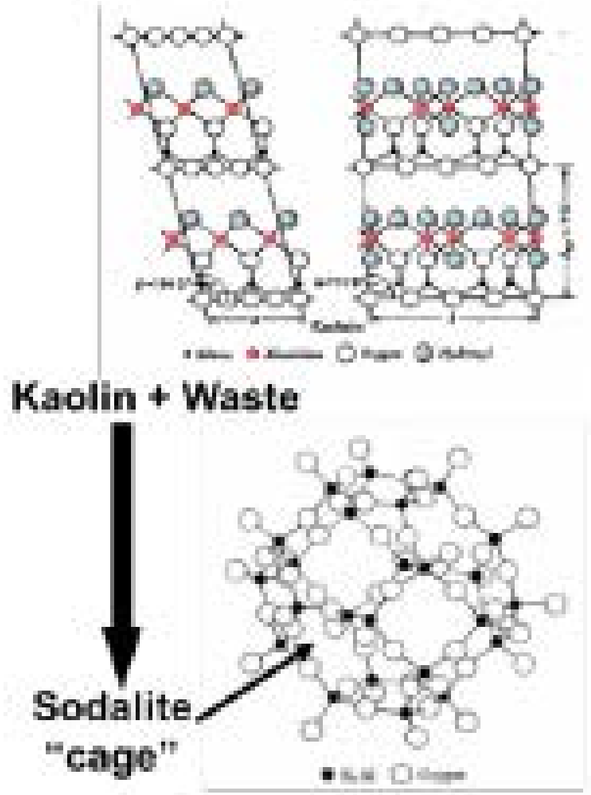


Figure 7 Sodalite "cage" contains halogens and radionuclides

High Performance Grout

- Performance Evaluation Based on Limited Studies
- Further study to verify the waste form long term durability and performance
- Pretreatment of Organics for LDR
- Production Scale
- Ecology Would Need to Complete a Significant Evaluation of Concur with these Results.

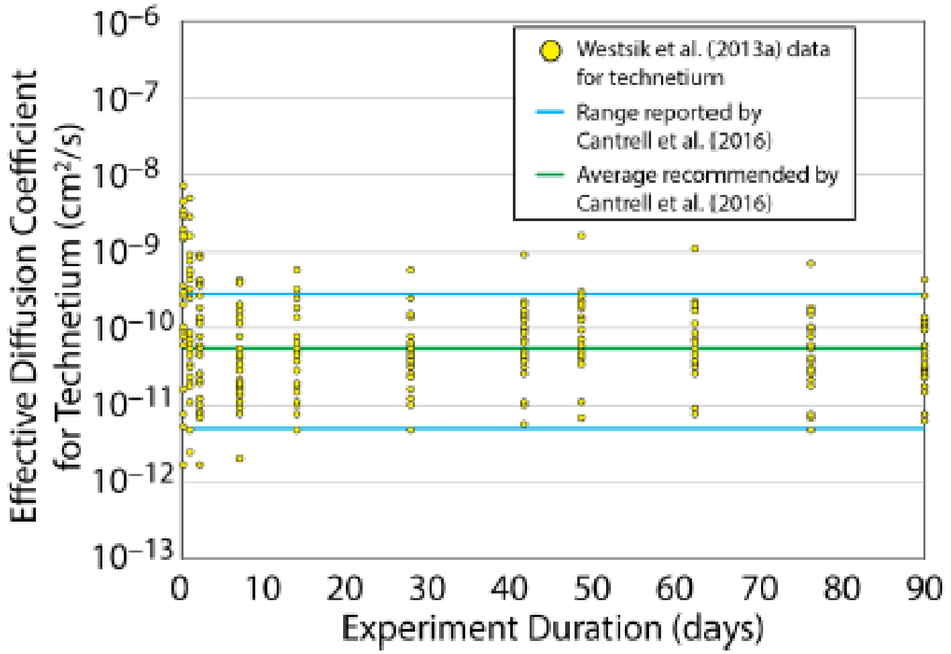


Figure C-2. Plot of effective diffusion coefficients for different durations of the experiment. Data show effective diffusion coefficients for technetium based on data in Westsik et al. (2013a), which were used by Cantrell et al. (2016) in developing recommended values for the Tc diffusion coefficient. The green line shows the recommended value given in Cantrell et al. (2016) and shown as a green circle in Fig. C-1. The blue lines show the range given in Cantrell et al. (2016) and shown as a bar in Fig. C-1.

Schedule

- Consideration of Treatment other Vitrification for Onsite Disposal
- Implementation of Other SLAW Treatment:
  - Revision of the TC&WM EIS
  - Revision of the Hanford Tri-Party Agreement
  - Revision of the Consent Order
- Current Priorities Expected to Drive the SLAW Schedule:
  - DFLAW Completion and Commissioning
  - HLW Vitrification Plant Restart & Completion
  - Pretreatment for HLW Vitrification