

TC&WM EIS Cumulative Impacts Analysis

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management



P.O. Box 550
Richland, Washington 99352

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A. H. Aly
INTERA, Inc.

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ENERGY | Richland Operations
Office
P.O. Box 550
Richland, Washington 99352

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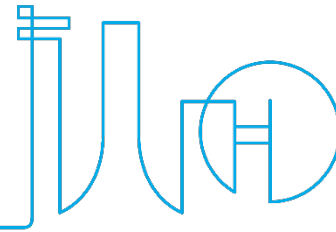
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Alaa Aly

*Cumulative Impact Evaluation
Approach Workshop 1*



March 1, 2018



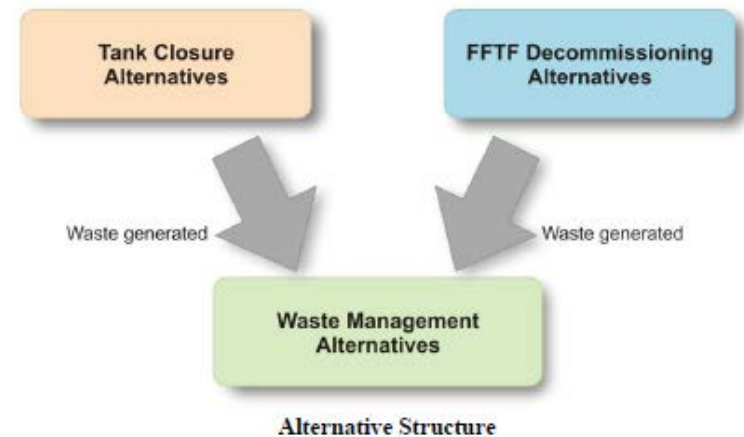
Topics

- Purpose
- Scope
- Alternatives Evaluated
- Key Findings
- Cumulative Impact Approach



Tank Closure and Waste Management EIS: Introduction

- The environmental impact statement evaluated three key areas:
 - Retrieval, treatment and disposal from single- and double-shelled tanks, with closure of the SST system
 - Final decontamination and decommissioning of the Fast Flux Test Facility
 - Disposal of Hanford's waste and other DOE sites low-level and mixed low-level waste



Pg S-39, TC&WM EIS summary document



TC&WM EIS Scope

- TC&WM EIS evaluated cumulative impacts, not only for groundwater but also for other metrics (employment, transportation, etc.)
- For non-TC&WM sources, all alternatives assumed site conditions in 2008:
 - No account for remediation of groundwater or waste sites
 - Focus on TC&WM sources

	DOE O 435.1 (1998/2001)	CERCLA (Ongoing)	RCRA (Ongoing)	NEPA (2008)
Analysis	Composite Analysis (cumulative dose evaluation)	RI/FS (Cumulative Impacts Evaluation)	RFI/CMS (Cumulative Impacts Analysis)	EIS (Cumulative Impacts Analysis)
Time frame	1,000 years post closure (performance objective); Up to 10,000 years (peak reporting)	A few hundred to several hundred years (1,000 years)	TBD	10,000 years
COPCs	Radionuclides only	Radionuclides and chemicals	Chemicals	Radionuclides and chemicals
Agencies	DOE	EPA, ECY, DOE	EPA, ECY, DOE	EPA, ECY, DOE
Future Actions	Anticipated (Hanford Site Disposition Baseline)	Pump and treat operations, tank closure, waste site remediation, waste management	Tank closure	Tank closure, waste management, FFTF decommissioning

Alternatives Evaluated for the Cumulative Impacts Analysis

- Several hundred impacts scenarios could result from the potential combinations. For purposes of the cumulative impacts analysis, the following combinations of alternatives were chosen to capture the range of actions and associated overall short- and long-term impacts:
 - Alternative 1 – No Action
 - Alternative 2 – Tank Closure Alternative 2B (Expanded WTP Vitrification; Landfill Closure), FFTF Decommissioning Alternative 2 (Entombment) with the Idaho Option for disposition of RH-SCs and the Hanford Reuse Option for disposition of bulk sodium; and Waste Management Alternative 2 (Disposal in IDF, 200-East Area Only) with Disposal Group 1
 - Alternative 3: Tank Closure Alternative 6B, Base Case (All Vitrification with Separations; Clean Closure); FFTF Decommissioning Alternative 3 (Removal) with the Idaho Option for disposition of RH-SCs and the Hanford Reuse Option for disposition of bulk sodium; and Waste Management Alternative 2 (Disposal in IDF, 200-East Area Only) with Disposal Group 2
Develop site-specific risk assessments that are integrated with the Central Plateau cumulative risk evaluation tool.



Cumulative Impacts Analysis

Key Findings

- Alternative 1: Long-term cumulative impacts on groundwater are dominated by Tank Closure Alternative 1 sources (for releases of technetium-99), non-TC & WM EIS sources (for releases of tritium and carbon tetrachloride), or a combination of both (for releases of iodine-129, uranium-238, chromium, nitrate, and total uranium).
- Alternative 2: Long-term cumulative impacts on groundwater are dominated by non-TC & WM EIS sources (for releases of tritium, uranium-238, carbon tetrachloride, chromium, and total uranium); a combination of non-TC & WM EIS sources and Waste Management Alternative 2 sources (for releases of iodine-129); a combination of non-TC & WM EIS sources and tank closure sources (for releases of nitrate); or all three (for releases of technetium-99).
- Alternative 3: Long-term cumulative impacts on groundwater are dominated by non-TC & WM EIS sources (for releases of tritium, uranium-238, carbon tetrachloride, chromium, and total uranium); a combination of non-TC & WM EIS sources and Waste Management Alternative 2 sources (for releases of iodine-129); a combination of non-TC & WM EIS sources and tank closure sources (for releases of nitrate); or all three (for releases of technetium-99).
 - COPC contributions from FFTF Decommissioning Alternative 1, 2, and 3 sources account for well under 1 percent of the total amount of COPCs released to the environment.



Cumulative Impacts Analysis Assumptions for Alternative 1

- Page M-31

Appendix M • Release to Vadose Zone

M.4.1.2 Releases from Other Sources in the Tank Farms

Releases from other sources related to the HLW tanks, including tank residuals, retrieval leaks, and ancillary equipment, were analyzed together. The amount of constituent released to the vadose zone is related to the activities under each Tank Closure alternative. Under Tank Closure Alternatives 6A and 6B, all tanks farms would be closed to a clean state by removing the tanks, ancillary equipment, and soil to a depth of 3 meters (10 feet) below the tank base. Where necessary, deep soil excavation would also be conducted to remove contamination plumes within the soil column. Therefore, releases from other sources related to the HLW tanks were not analyzed.

Under Tank Closure Alternative 1, tank farms would be maintained in the current condition indefinitely; however, for analysis purposes, they are assumed to fail after an institutional control period of 100 years. At this time, the salt cake in single-shell tanks is assumed available for leaching into the vadose zone, and the liquid contents of double-shell tanks are assumed to be discharged directly to the vadose zone. Table M-20 and Figures M-13 through M-18 indicate the constituent release estimated under Tank Closure Alternative 1.



Summary

- TC&WM EIS evaluated cumulative impacts on groundwater.
- For non-TC&WM sources, all alternatives assumed site conditions in 2008:
 - No account for remediation of groundwater or waste sites.
 - Focus on TC&WM sources

