Measure 3.1.b.: Supplemental - Increase completion percentage of the Hanford tank waste treatment plant from 63% to 86% by 2016

HEALTHY LANDS

Department of Ecology

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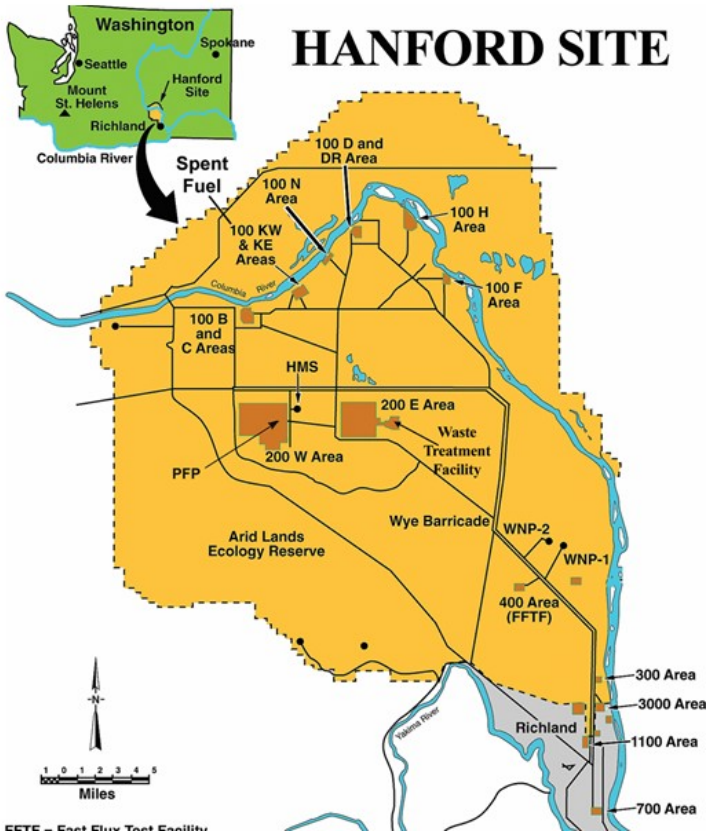
DEPARTMENT OF ECOLOGY
State of Washington

Background

Hanford: The nation's largest federal cleanup site

- 586 square miles
- 72 square miles contaminated groundwater



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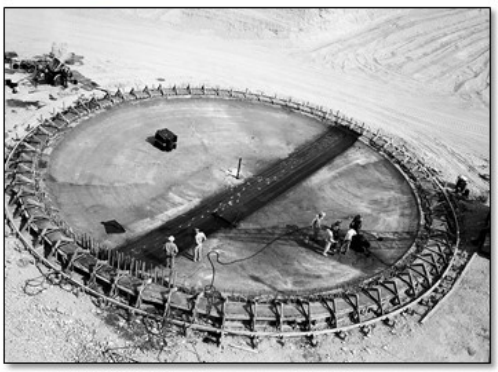
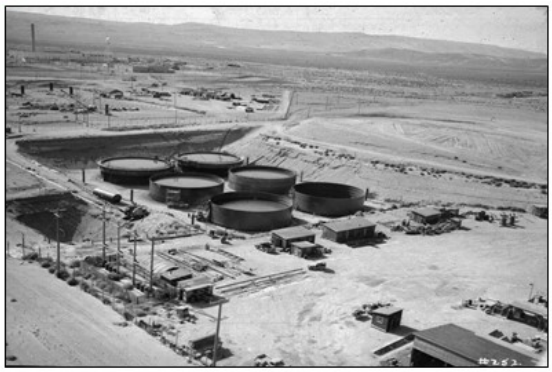
History and Risk from Underground Waste Tanks



Tank foundation under construction.



Tanks are grouped in tank farms of 6 to 12 tanks.

Tanks are underground to shield radiation.

- 56 Million Gallons of High Level Waste
- 177 Tanks
  - 149 single-shell
    - Over a million gallons has leaked to the soils and groundwater from the single-shell tanks.
  - 28 double-shell
    - One double-shell tank is now leaking into its outer shell.

The Solution – Vitrify Tank Waste

- Turning waste into glass immobilizes it.
- Immobilization reduces potential for environmental impact.

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The Solution – Vitrify Tank Waste

Waste Treatment Plant consists of five major facilities

1. **Pretreatment Facility (PT)** Receives waste from double-shell tanks, divides into High Level Waste (HLW) and Low Activity Waste (LAW) for vitrification in separate facilities.

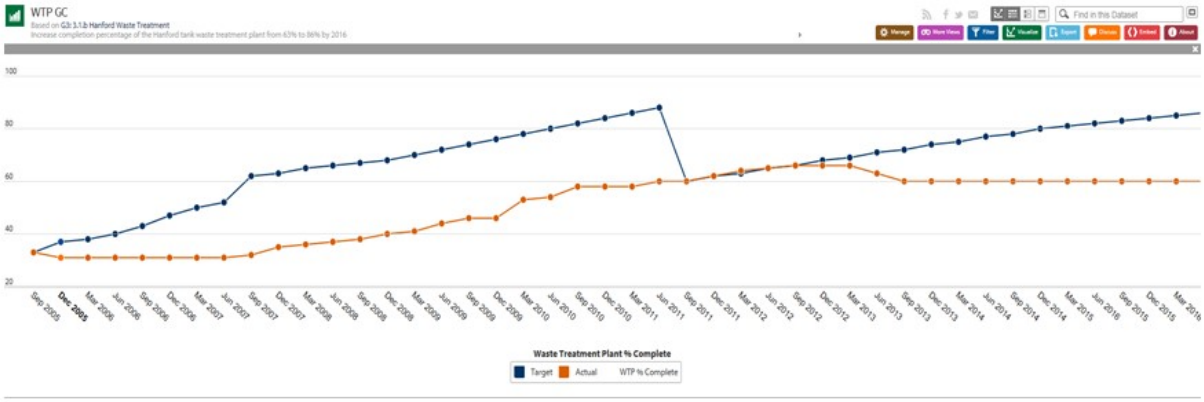
2. **Low Activity Waste (LAW)** Melters vitrify waste. Glass placed in containers and taken for permanent disposal at Integrated Disposal Facility.

3. **High Level Waste (HLW)** Melters vitrify waste. Glass placed in canisters and stored on-site pending transport to national deep geologic repository.

4. **Analytical Laboratory** Ensures that vitrified HLW and LAW waste meets regulatory requirements and standards.

5. **Balance of Facilities** Support services and utilities: steam plant, electrical substation, back-up generators, warehousing, waste transfer pipelines.

Current State of Waste Treatment Plant: Off Target



- Prior Goal: 86% completed by 2016.
- Current Status: 60% completed.
- Construction progress measured since 1999.
- Project construction delays over time due to management, budget, and technical issues.
- Reported to Goal Council in Nov 2015 that we would not meet the 2016 goal.
- State sued USDOE over missed deadlines. Revised federal court consent decree established new date for completion.

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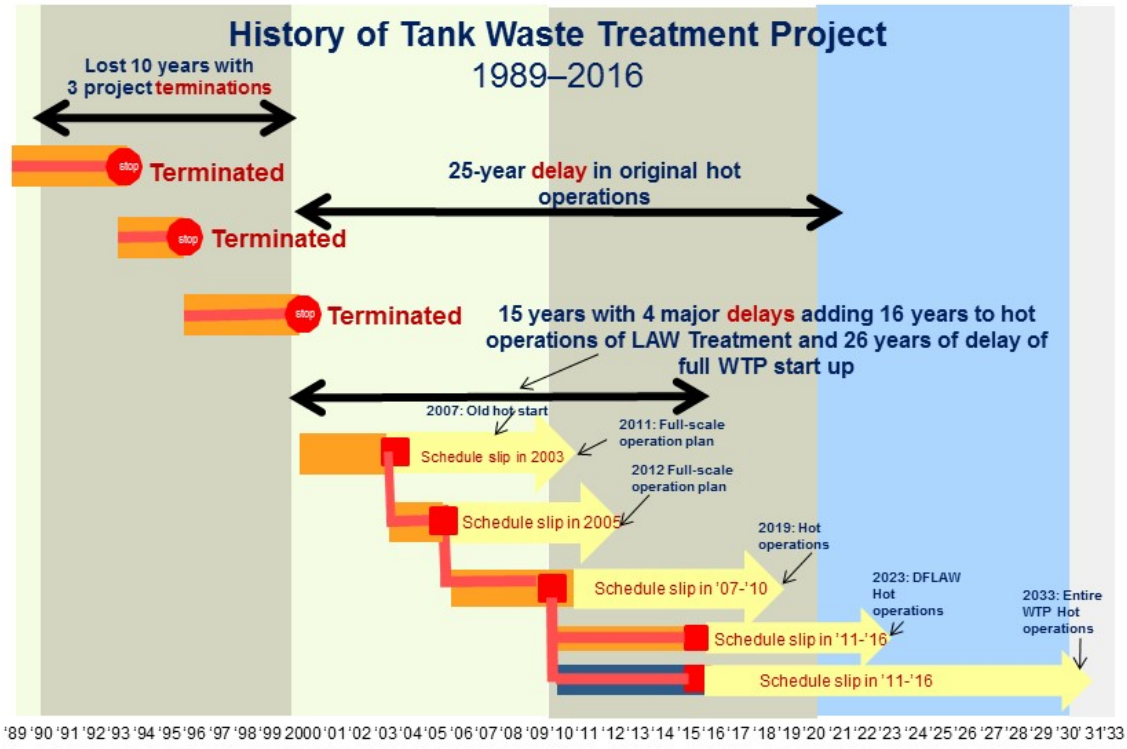

Problem

Waste Treatment Plant completion schedule shifted from 2019 to 2033.

Milestones Pushed Back	2010 Consent Decree	2016 Consent Decree
LAW construction substantially complete	2014	2020
LAW hot commissioning complete	2019	2023
HLW construction substantially complete	2016	2030
PT construction substantially complete	2017	2031
Hot start of Waste Treatment Plant	2019	2033

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Opportunities

1) Work with DOE to begin low activity waste treatment by 2023.
2) Resolve technical issues to allow high level waste treatment by 2033.

Low activity waste is expected to fill 60,000-100,000 4' x 7.5' containers. **High level waste** will fill an estimate 12,000-16,000 2'x14.5' canisters.

Direct Feed Low Activity Waste Treatment - Subset of Overall Tank Waste Mission

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Strategies

Ensure Direct Feed Low Activity Waste treatment by December 2023 by completing permitting for DFLAW facilities.

Challenges

Completing DFLAW by 2023

- Funding, design, permitting and construction of **two new facilities** – EMF and LAWPS
- Completing construction of LAW and LAB
- Maintaining sufficient federal funding

Completing High Level Waste Treatment Facility by 2033

- Resolution of technical issues
- Redesign, permitting and construction
- Ensuring USDOE seeks sufficient funding to support the work

Strategies

What Ecology is Doing

DFLAW

- Interactive permitting and design oversight
- Phased permitting
- Construction oversight
- Ensuring DOE seeks sufficient funding for new facilities

High Level Waste Waste Treatment Plant

- Participating in resolution of technical issues
- Incorporating results of technical issues resolution into design
- Phased permitting
- Construction oversight
- Ensuring DOE seeks sufficient funding to support the work

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Proposal for New Measure

- Cannot provide meaningful measure of overall WTP progress – recommend removing it from 3.1.b
- Near-term focus (through 2023) shifts to DFLAW, while maintaining support and oversight on overall WTP

New Measure

- Increase the percentage of completed tasks required for constructing and operating Hanford low activity tank waste treatment from 0% in 2016 to 100% by 2023
  - Focuses on successful operation of DFLAW and vitrification of waste at the Hanford site by December 2023.

TASK TIMELINE

	Task Leader	ECY Role	Description	2017	2018	2019	2020	2021	Aggregate % Complete (approx)
1	USDOE	Monitor	Site infrastructure upgrades complete	Apr					4.5
2	ECY		Issuance of EMF transfer line class 2 modification	Jul					9
3	USDOE	Monitor	LAWPS submit CD-3A package	Sep					13.5
4	USDOE	Monitor	ILAW transporter complete design	Sep					18
5	USDOE	Monitor	LAWPS submit CD-2/3 package	Oct					22.5
6	USDOE	Monitor	LAWPS initiate site prep	Nov					27
7	USDOE	Monitor	IDF PA submit final phase 2 WIR to ORP		Jan				37.5
8	USDOE	Monitor	LAW complete construction		Jun				36
9	ECY		Issuance of EMF secondary containment class 3 modification		Jun				40.50
10	USDOE	Monitor	LAWPS full construction start		Aug				45
11	USDOE	Monitor	ILAW transporter first transporter delivered		Sep				49.5
12	ECY		Issuance of EMF large equipment documents and drawings class 3 modification		Dec				54
13	USDOE	Monitor	EMF complete construction			Jun			58.5
14	USDOE	Monitor	Complete IDF contractor ORR			Aug			63
15	USDOE	Monitor	ILAW transporter ready for cold commissioning			Dec			67.5
16	ECY		Issuance of LAWPS final permit				Jan		72
17	USDOE	Monitor	LAW start cold commissioning				Jul		76.5
18	ECY		LAW Operations permit complete				Sep		81
19	USDOE	Monitor	LAW Facility Construction Substantially Complete				Dec		85.5
20	USDOE	Monitor	LAW start hot commissioning					Oct	90
21	USDOE	Monitor	LAWPS clear AP-107 for startup/1st feed batch prep complete					Oct	94.5
22	USDOE	Monitor	LAW complete hot commissioning					Dec	100.0

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Detailed Action Plan:

Task	Task Lead	Partners	Expected Outcome	Status	Due Date
Complete infrastructure upgrades to support DFLAW	USDOE	Ecology	Site infrastructure upgrades complete		Apr 2017
Review permitting, complete regulatory requirements to modify EMF permit	Ecology	USDOE	Issuance of EMF transfer line class 2 modification		Jul 2017
Complete LAWPS design engineering, informal permitting review	USDOE	Ecology	LAWPS submit CD-3A design package (design of long lead equipment)		Sep 2017
Complete ILAW design engineering, safety basis requirements	USDOE	Ecology	ILAW transporter complete design		Sep 2017
Complete LAWPS design engineering, informal permitting review	USDOE	Ecology	LAWPS submit CD-2/3 package (Remaining design)		Oct 2017
Complete LAWPS safety basis requirements, permitting documentation	USDOE	Ecology	LAWPS initiate site prep		Nov 2017

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Assistance Needed:
How can Goal Council or Governor Help?

- Monitor progress on DFLAW; insist on continued emphasis and progress on Waste Treatment Plant.
- Communicate to Congressional delegation the importance of DFLAW, of continued funding for Waste Treatment Plant; and support for retrieval of aging tanks.
- Assist with communication to stakeholders and residents about the importance of Hanford cleanup.
- Governor's office meet with new Secretary of Energy to emphasize the critical need to keep Hanford tank waste treatment a high priority.