U.S. DEPARTMENT OF ENERGY | OFFICE OF ENVIRONMENTAL MANAGEMENT

NAS Continued Analysis of Supplemental Low Activity Waste Treatment

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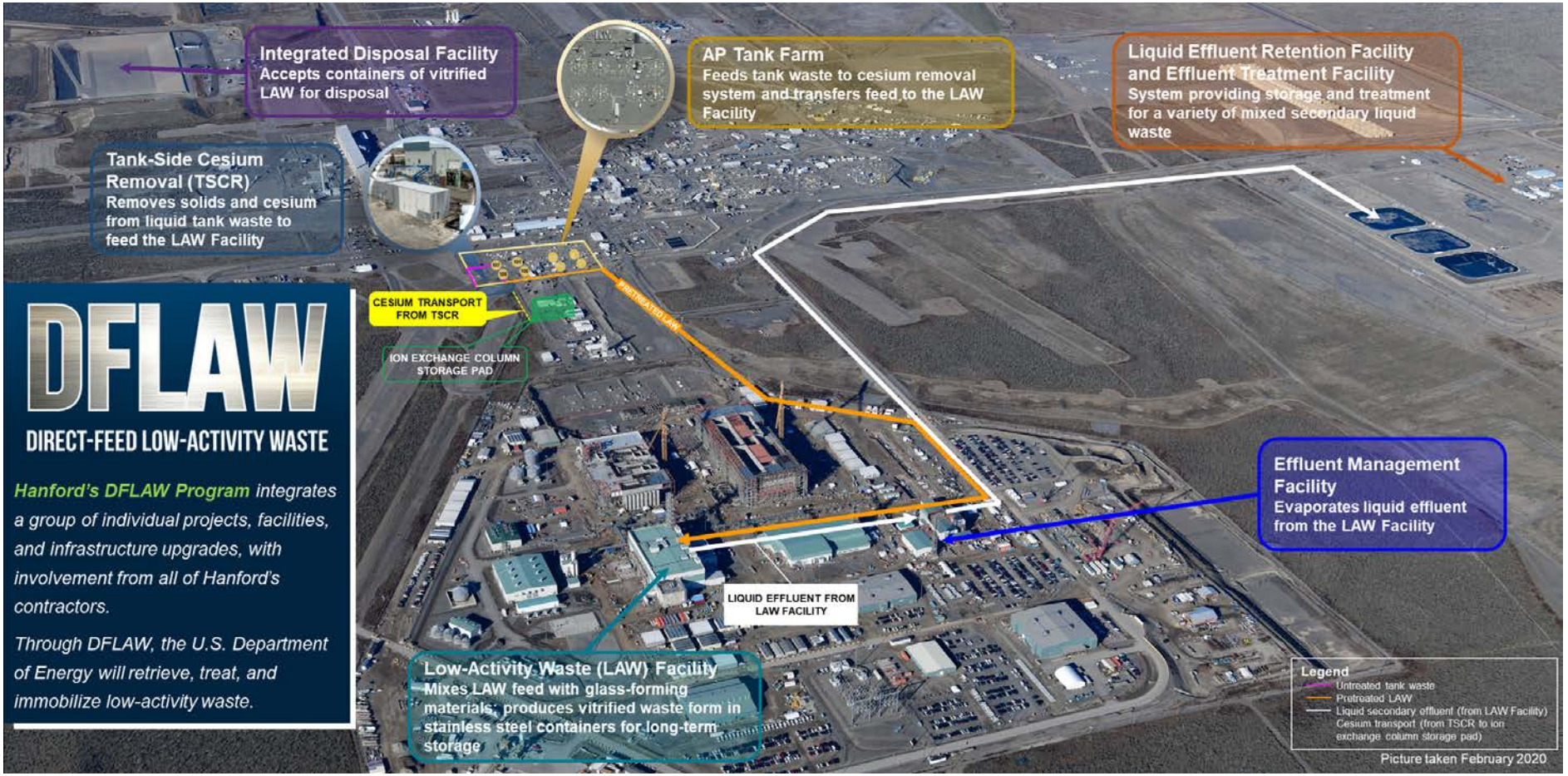
Tank Waste Mission Overview

THE HANFORD SITE

ONE HANFORD

Direct-Feed Low-Activity Waste



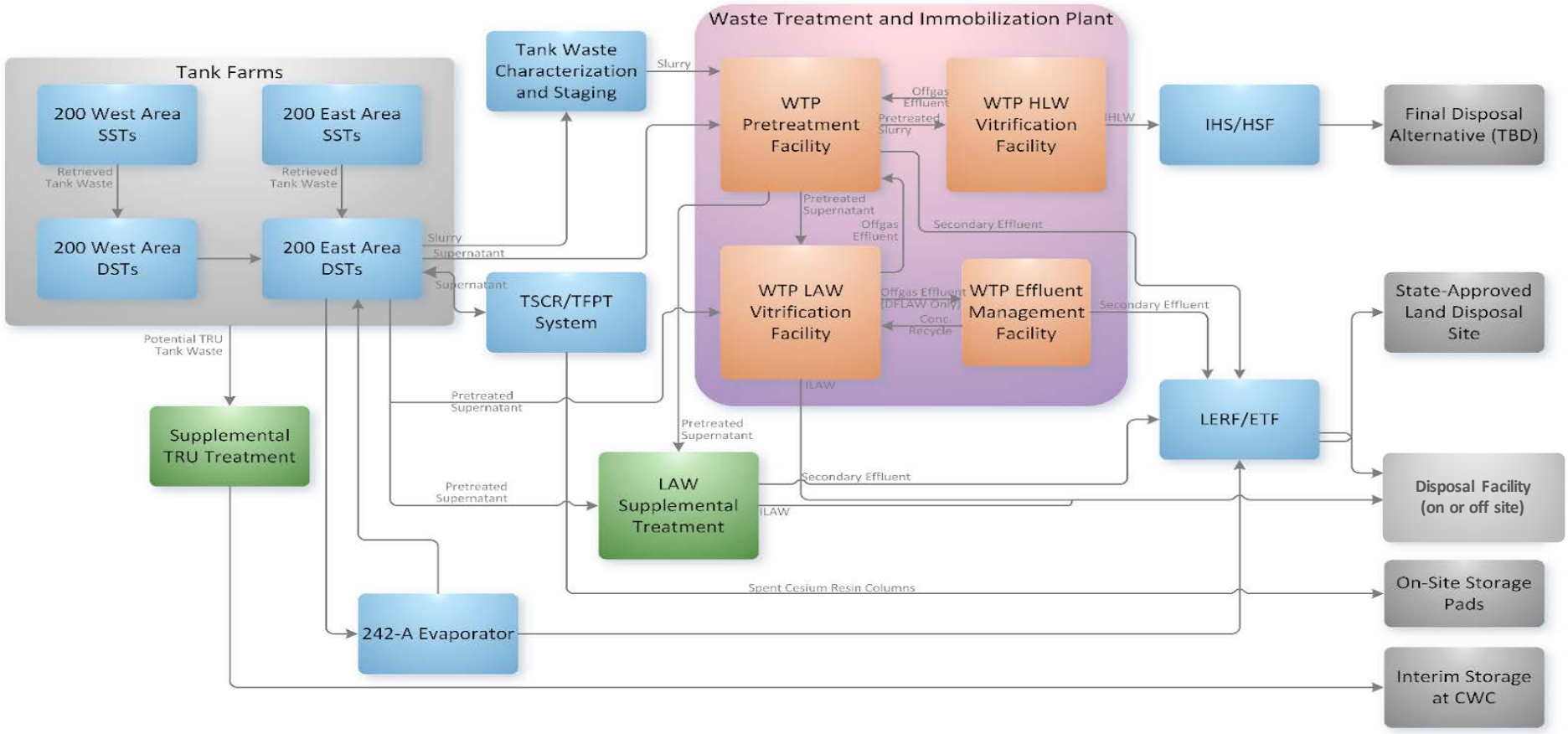
Background

- 2013 record of decision on the Tank Closure and Waste Management Environmental Impact Statement deferred the supplemental low-activity waste (SLAW) decision
- Tri-Party Agreement milestone M-62-045 identified the DOE decision date as April 30, 2015
  - Requires evaluation of vitrification
  - Date extended to April 30, 2021 (in dispute)
  - Included in holistic negotiations

Programmatic Needs

- Conclusion of open issues in 2017 *National Defense Authorization Act*, Section 3134
- Independent recommendation on path forward for treatment of SLAW
  - Need SLAW decision supported by facts and data
  - Clear decision framework as per Congressional language
- Regulatory pathway for land disposal of treated waste under the *Resource Conservation and Recovery Act* (RCRA)

Flowsheet



Legend

- Tank Farms
- WTP
- Supp. Treatment
- Other

Acronyms

CWC	Central Waste Complex
DST	double-shell tank
ETF	Effluent Treatment Facility
HLW	high-level waste
HSF	Hanford Shipping Facility
IHS	Interim Hanford Storage
LAW	low-activity waste
LERF	Liquid Effluent Retention Facility
MT	metric ton
SST	single-shell tank
TSCR	tank side cesium removal
TFPT	Tank Farm pretreatment
TBD	to be determined
TRU	transuranic
WTP	Hanford Tank Waste Treatment and Immobilization Plant

For illustrative purposes only: The flowsheet presented here has been simplified for presentation purposes.

SP8_S1SFS_2017-07-18_R1

Technical Progress

- Continued improvement to glass waste loading
- Class A waste options: Crystalline silico-titanate (CST) real waste testing results show very high capture of strontium-90 without affecting cesium-137 retention
- Technetium-99 and iodine-129
  - Continued work on “getters” for grouted waste
  - Offsite options exist without “getters”
- Organics
  - Evaporation has proven to separate most organics
  - Permanganate strike chemically treats

Programmatic Opportunities

- Direct-Feed LAW treatment anticipated to start in 2023
- Test Bed Initiative Low-Level Waste Offsite Disposal Project demonstration
- Completing High-Level Waste (HLW) Analysis of Alternatives to deliver affordable and achievable treatment pathway for rest of tank waste mission
  - Evaluates Direct-Feed High-Level Waste
  - Evaluates alternate waste conditioning options
- Holistic negotiations ongoing with Washington State Department of Ecology (Ecology) and U.S. EPA

Test Bed Initiative Opportunity

- Completed 3-gallon demonstration in 2017
- Conducting NEPA evaluation for 2,000-gallon demonstration
- Waste Incidental to Reprocessing (WIR) evaluation with NRC review required after NEPA evaluation
- RCRA Research and Development Demonstration permit from Ecology required after WIR evaluation

Summary

- Technical progress on many fronts since Section 3134
- Numerous programmatic opportunities to empty tanks sooner and dispose of waste safely and efficiently
- Timing: Need SLAW treatment in time to support HLW
- DOE needs the following:
  - Clear facts-and-data-based recommendations
  - Decision framework per Congressional language
  - Regulatory path forward for RCRA land disposal
  - Proactive and collegial participation in the NAS process to ensure best possible results

Questions?


The Hanford Reach
White Bluffs Overlooking the Columbia River