



OFFICE OF
RIVER PROTECTION
United States Department of Energy

Hanford Advisory Board

Agency Update

for the

Office of River Protection

Kevin Smith, Manager

Presented by: U.S. Department of Energy, Office of River Protection

February 3, 2016





The Tank Farms

A 200 Area Aerial Overview

200 West Area

200 East Area

Retrieval efforts
at double-shell
tank AY-102

Tank Farm update

Future location of
Low-Activity Waste
Pretreatment System

Waste Treatment and
Immobilization Plant

- Single-Shell Tank Farm
- Double-Shell Tank Farm





Our Team

Office of River Protection (ORP)

ORP is responsible for planning, integrating, and managing the River Protection Program executed by contractors performing work under ORP management. ORP has 225 employees*, both federal and contractor.

Washington River Protection Solutions (WRPS)

WRPS is the prime contractor responsible for safely managing and operating the Tank Farms. WRPS has 2,054 employees*.

Bechtel National, Inc. (BNI)

BNI is responsible for the engineering, construction, startup and commissioning of the Waste Treatment Plant and Immobilization Plant. BNI has 2,864 employees*.

Wastren Advantage, Inc. (WAI)

WAI is the prime contractor responsible for managing the 222-S Laboratory.



*As of July 2015





Mission

To safeguard the nuclear waste stored in **Hanford's 177 underground tanks**, and to manage the waste safely and responsibly until it can be treated in the Waste Treatment and Immobilization Plant (WTP) for final disposition.

Vision

To be a high-performing, innovative organization that is safety-conscious and employee-focused, and committed to achieving our mission with environmental and fiscal responsibility.





Mark Edgren, Chief of Staff



Elaine Diaz, Chief Engineer



Carrie Meyer, Director of
Communication and
Information Management

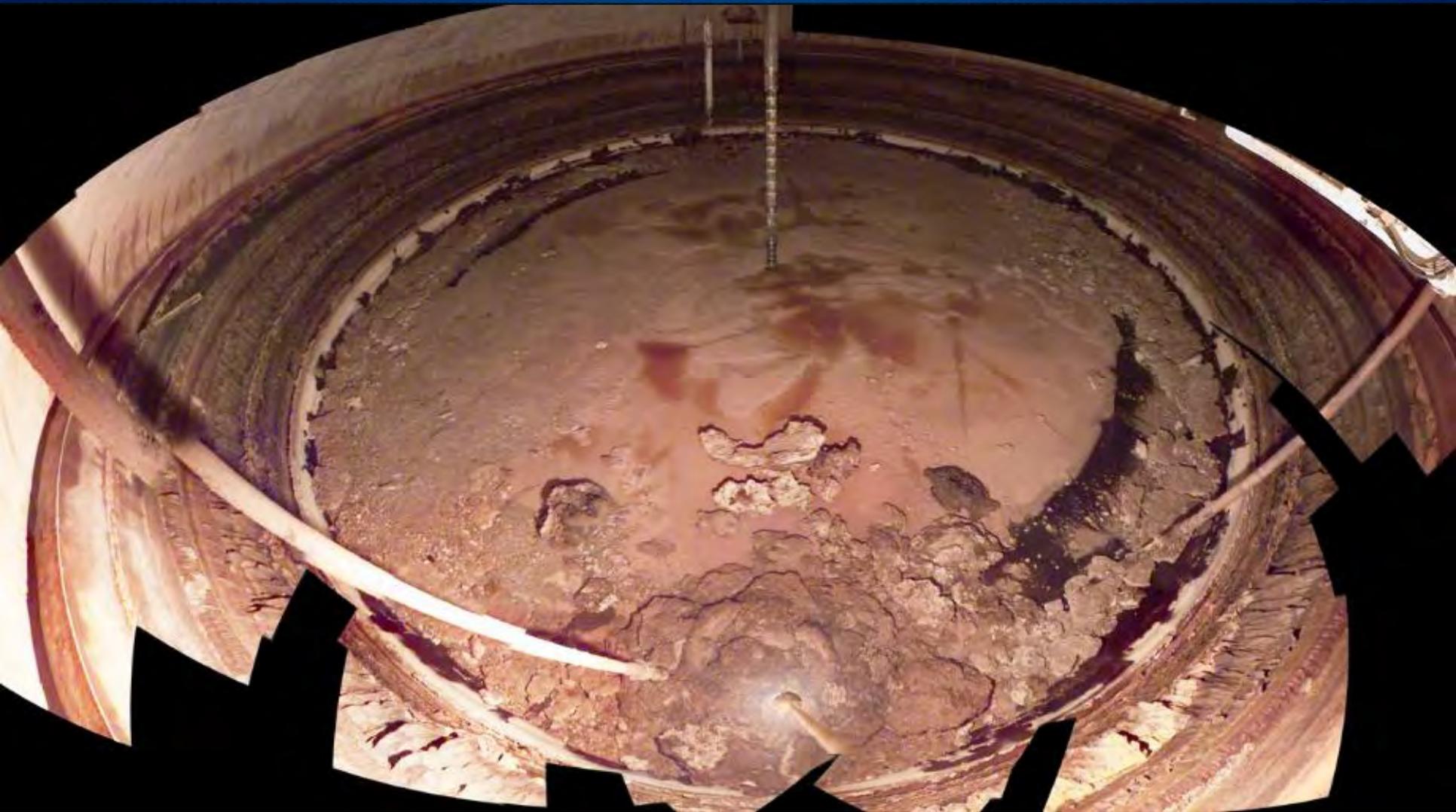


| PBS | Project Baseline Summary (PBS) Title | FY 2015 Appropriation (\$ in Thousands) | FY 2016 Omnibus Appropriation (\$ in Thousands) |
|--------------------|--|---|--|
| ORP-0014 | Radioactive Liquid Tank Waste Stabilization and Disposition | \$ 522,000 | \$ 649,000 |
| ORP-0014 | 15-D-409, Low Activity Waste Pretreatment System (LAWPS) | \$ 23,000 | \$ 75,000 |
| Subtotal | Radioactive Liquid Tank Waste Stabilization and Disposition | \$ 545,000 | \$ 724,000 |
| | | | |
| ORP-0060 | WTP – Subprojects A-D | \$ 563,000 | \$ 595,000 |
| ORP-0060 | WTP – Subproject E | \$ 104,000 | \$ 95,000 |
| Subtotal | Major construction – Waste Treatment and Immobilization Plant (WTP) | \$ 667,000 | \$ 690,000 |
| | | | |
| Total – ORP | Office of River Protection (ORP) Funding Summary | \$1,212,000 | \$1,414,000 |



Tank Farm (TF) Update



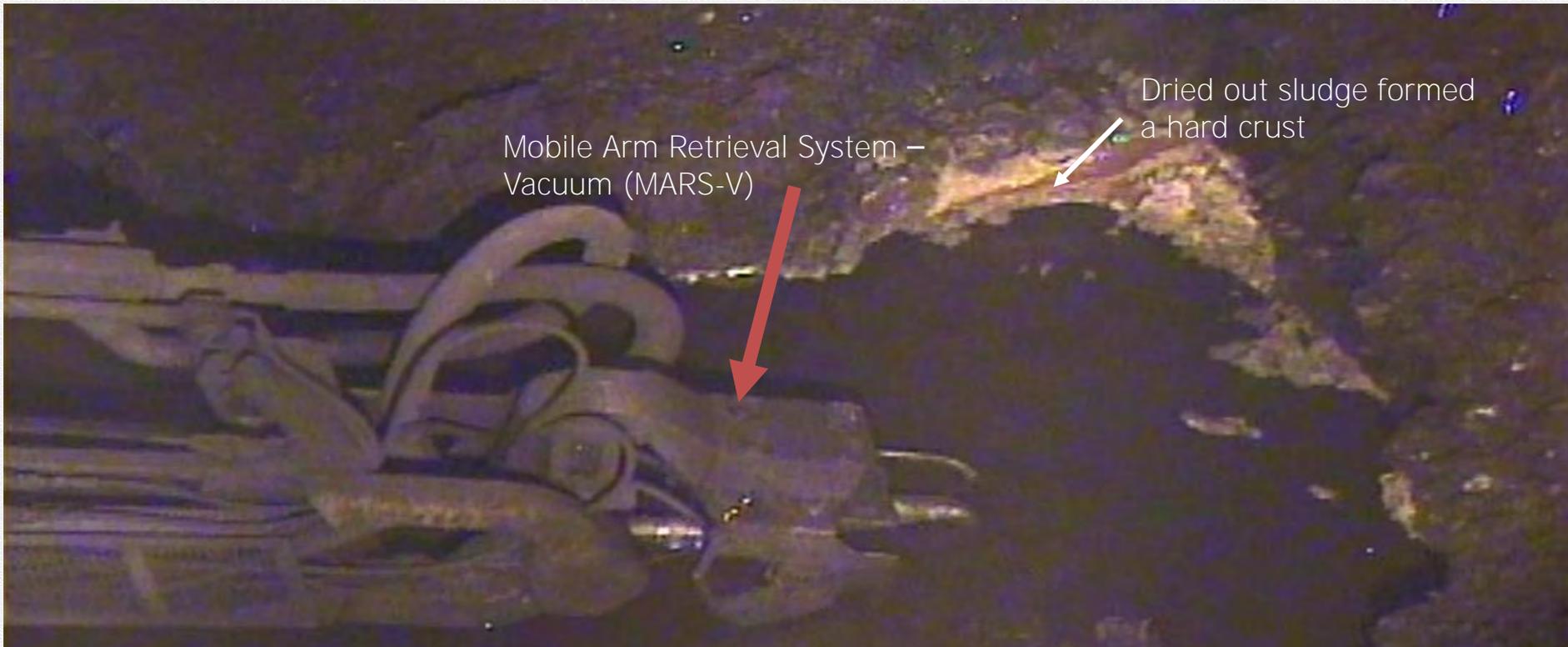


Tank C-102 marks the 14th single-shell tank retrieved in C Farm





- High pressure water broke up crust allowing Mobile Arm Retrieval System – Vacuum (MARS-V) to resume retrieval
- Retrieved approximately 45 percent of waste utilizing MARS-V
- Evaluating retrieval work plan due to recent MARS-V challenges





- Retrieval continues to remove about 23,000 gallons of waste remaining
- Using a multi-phase approach of sluicing, a caustic preconditioning phase and a sluicing and high-pressure water retrieval phase
- Preconditioning phase added and recirculated 15,000 gallons of caustic to assist in softening the hard waste structure



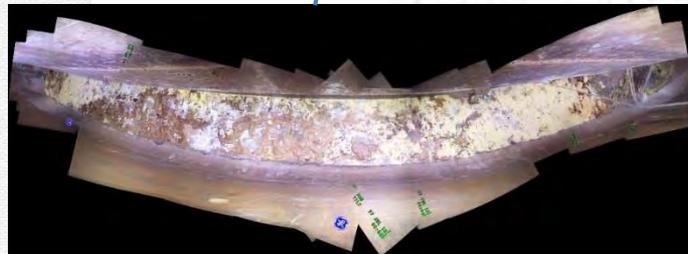
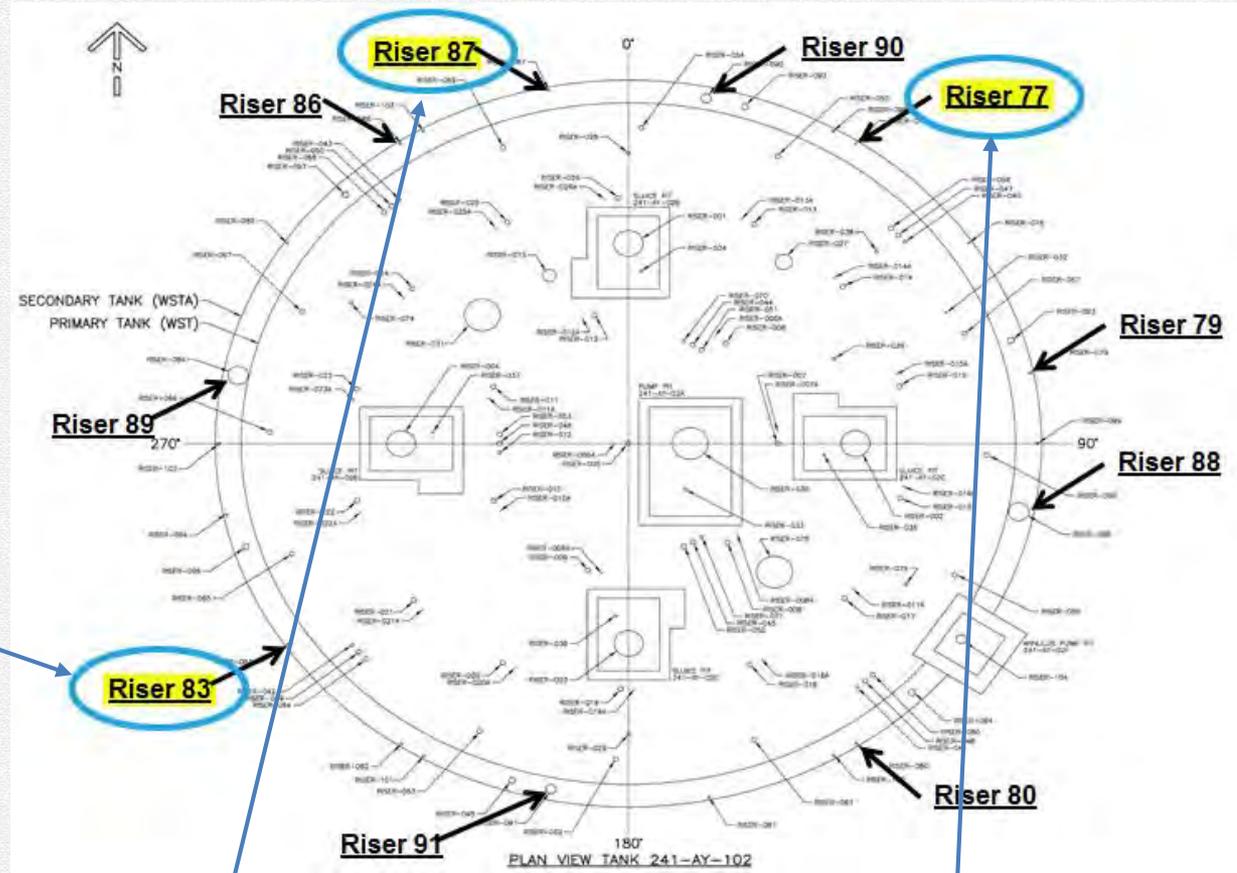
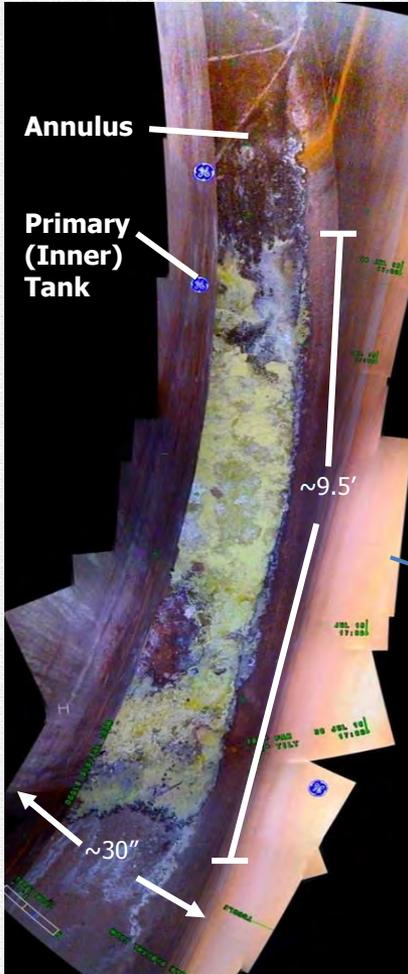
Tank trucks loading sodium hydroxide into C-111 as part of the preconditioning phase







Double-shell tank AY-102 riser locations





Complete procurement, construction, and installation of all equipment necessary for waste removal, and begin retrieving supernatant from Tank AY-102 no later than March 4, 2016.

| Scope | Status as of 01/2016 | Schedule | | | | | | | | | | | |
|-----------------------------|-------------------------|----------|--|--|--|---------|--|--|--|---------|--|--|--|
| | | FY 2014 | | | | FY 2015 | | | | FY 2016 | | | |
| Engineering and Design | 100% | | | | | | | | | | | | |
| Procurement | 95% | | | | | | | | | | | | |
| Construction & Installation | 95% | | | | | | | | | | | | |
| Commissioning | 40% | | | | | | | | | | | | |
| Ready to pump | | | | | | | | | | | | | |







- Hired additional Industrial Hygiene (IH) staff
- Researching personal protective equipment improvements
- Developing functions and requirements for new field monitoring and alarm equipment
- Evaluating and procuring new personal monitoring and alarming instruments
- Sampling and characterizing tank head space gases
- Developing new training programs
- Enhancing communications
- Strengthening vapor event documentation processes

**Phase 1 - near-term actions for
fiscal years 2015 and 2016**



Workers preparing to sample tank headspace for chemical constituents



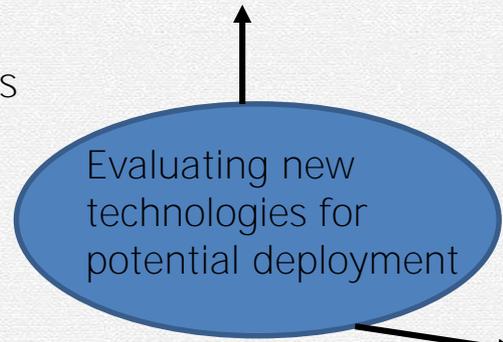


Based on the data collected during Phase 1, we will determine what additional actions are needed in Phase 2 to institutionalize improvements and make further improvements as needed in the following areas:

- Monitoring
- Engineered vapor controls/technologies
- Research and development
- Industrial hygiene program standards and requirements



Portable infrared camera



Portable air quality monitor

**Phase 2 – long-term potential actions
for fiscal years 2017 – 2019**





Waste Treatment and Immobilization Plant (WTP) Update



Analytical Laboratory
97% complete
(November 2015)

Low-Activity Waste Facility
(November 79% complete
2015)

Pretreatment Facility
56% complete
(September 2012 values)

High-Level Waste Facility
62% complete
(September 2012 values)

Balance of Facilities
88% complete
(November 2015)





WTP Update Low-Activity Waste Facility













Direct-Feed Low-Activity Waste

DFLAW DIRECT-FEED LOW-ACTIVITY WASTE

INTEGRATED DISPOSAL FACILITY (IDF)

Accepts canisters of vitrified low-activity waste for long-term disposal



TANK FARMS

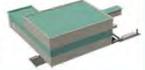
Waste stored and maintained until ready for treatment at the Waste Treatment & Immobilization Plant

- » Complete retrieval activities in C-Farm
- » Begin A/AX Farm retrievals



LAW PRETREATMENT SYSTEM (LAWPS)

Separates high-level waste from low-activity waste for feeding to LAW



ANALYTICAL LABORATORY (LAB)

Sampling of low-activity waste feed to ensure meets chemical standards



LOW-ACTIVITY WASTE FACILITY (LAW)

Mixes LAW feed with glass-forming materials; vitrifies for storage in canisters



BALANCE OF FACILITIES (BOF)

20 buildings providing support for operation of Waste Treatment & Immobilization Plant complex



DIRECT FEED LOW-ACTIVITY WASTE (DFLAW)

Process vitrifies low-activity waste into stable glass form for permanent disposition

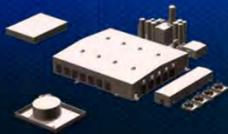


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LOW-ACTIVITY WASTE FACILITY



BALANCE OF FACILITIES



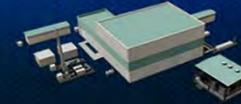
ANALYTICAL LABORATORY



INTEGRATED DISPOSAL FACILITY



LOW-ACTIVITY WASTE PRETREATMENT SYSTEM

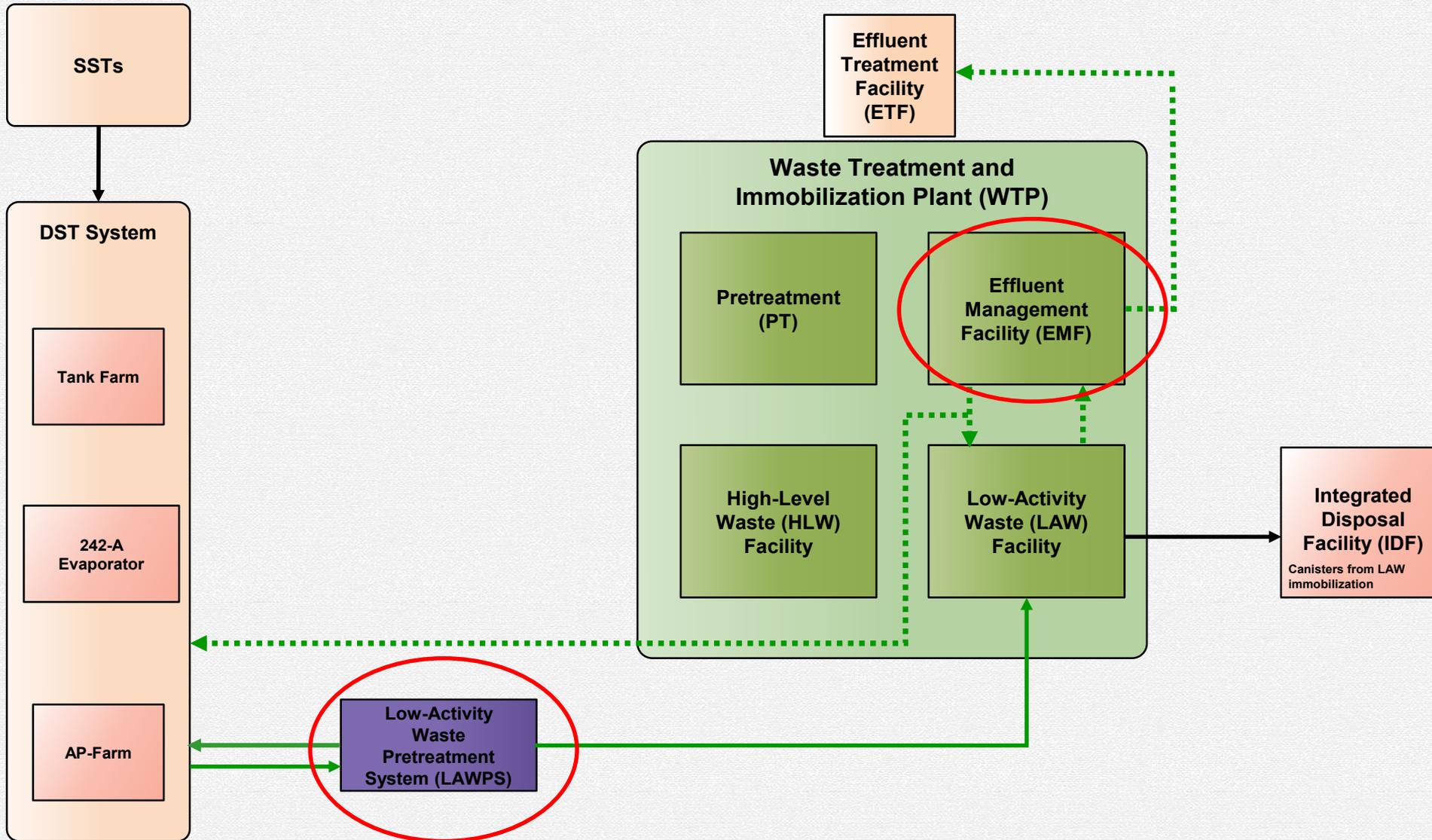


DIRECT FEED LOW-ACTIVITY WASTE



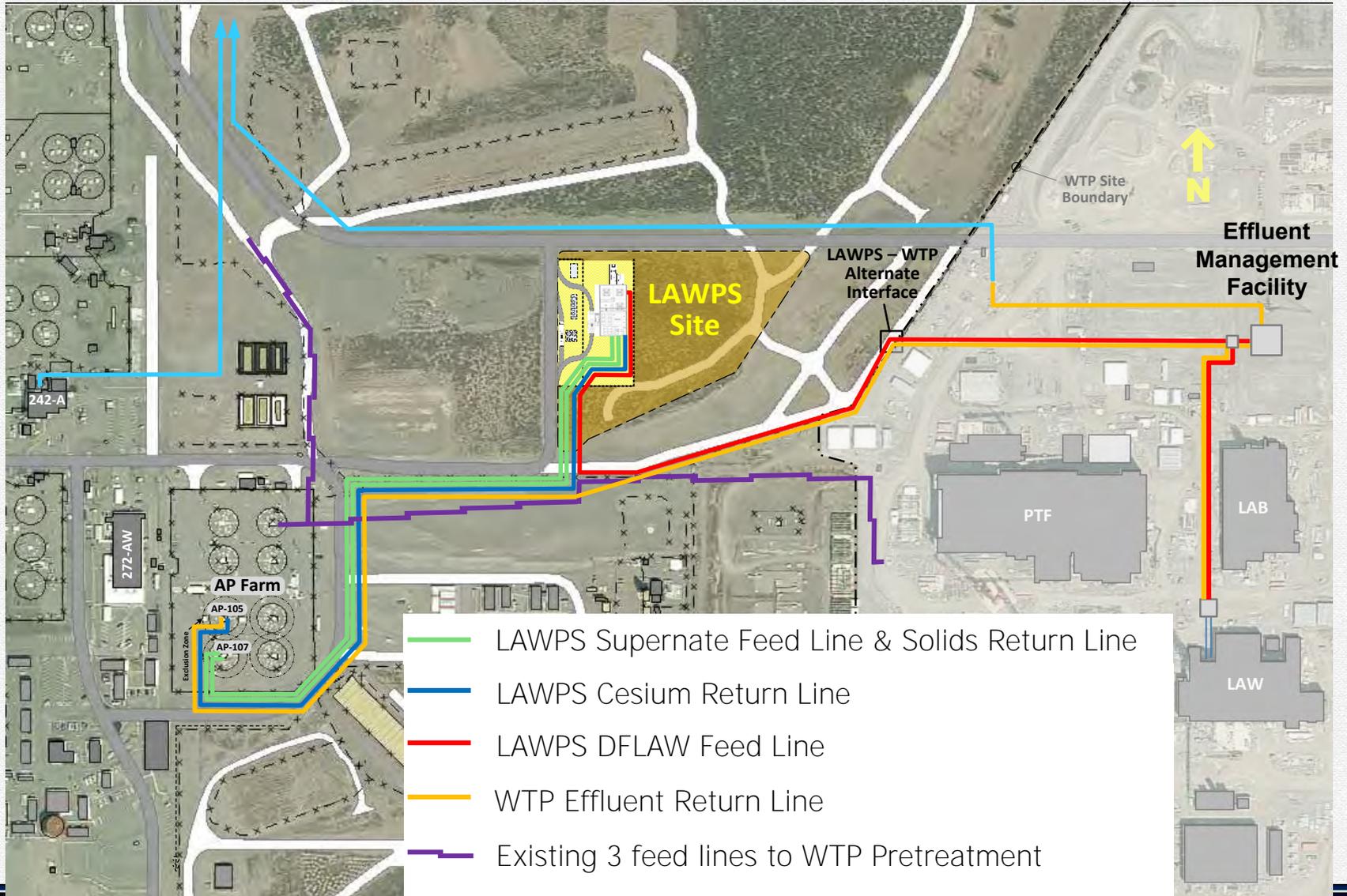


Direct-Feed Low-Activity Waste





Direct-Feed Low-Activity Waste Transfer lines



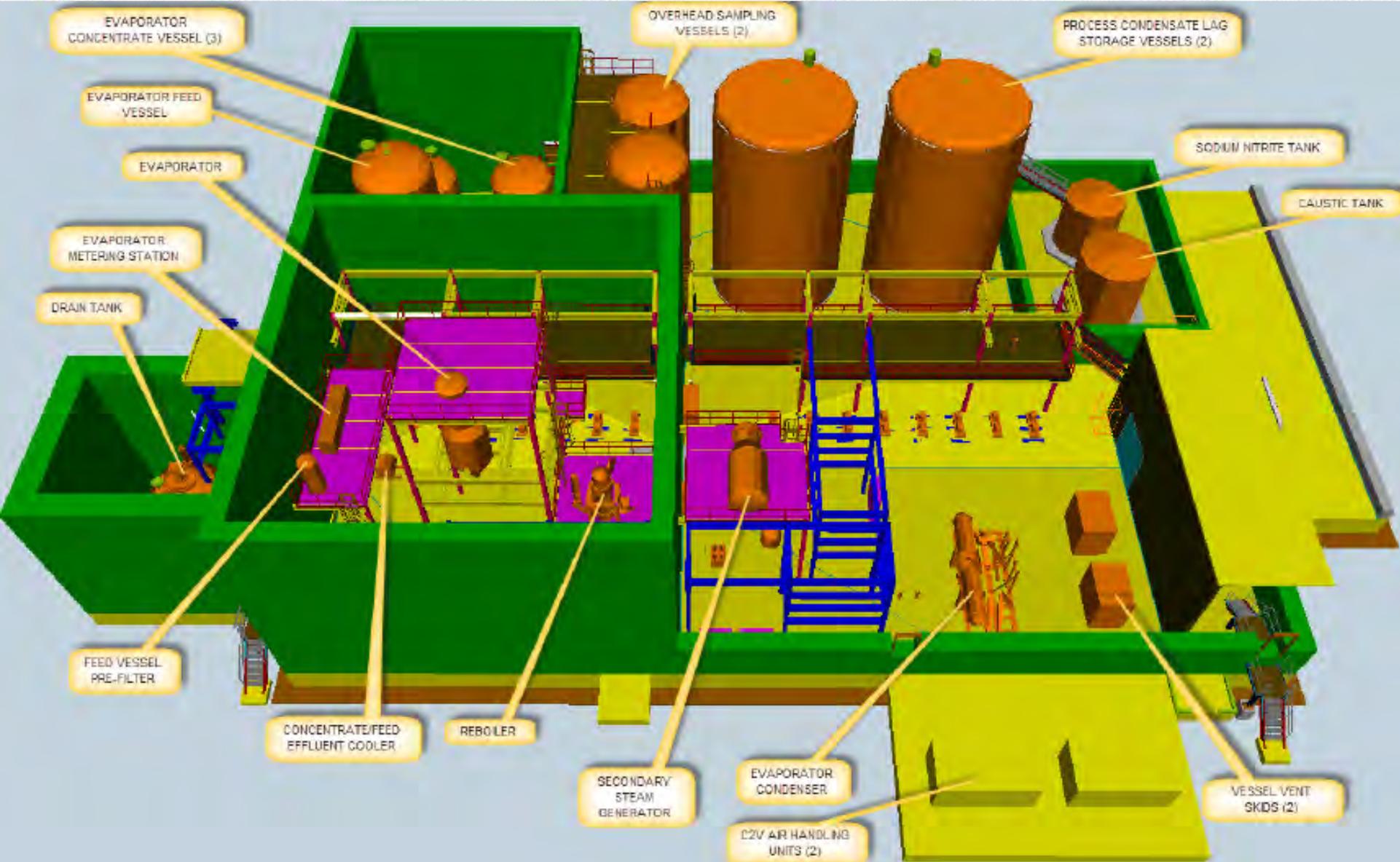


Effluent Management Facility Excavation begins





Effluent Management Facility



*"Protecting our workers,
the public, and the environment"*





Backup Slides



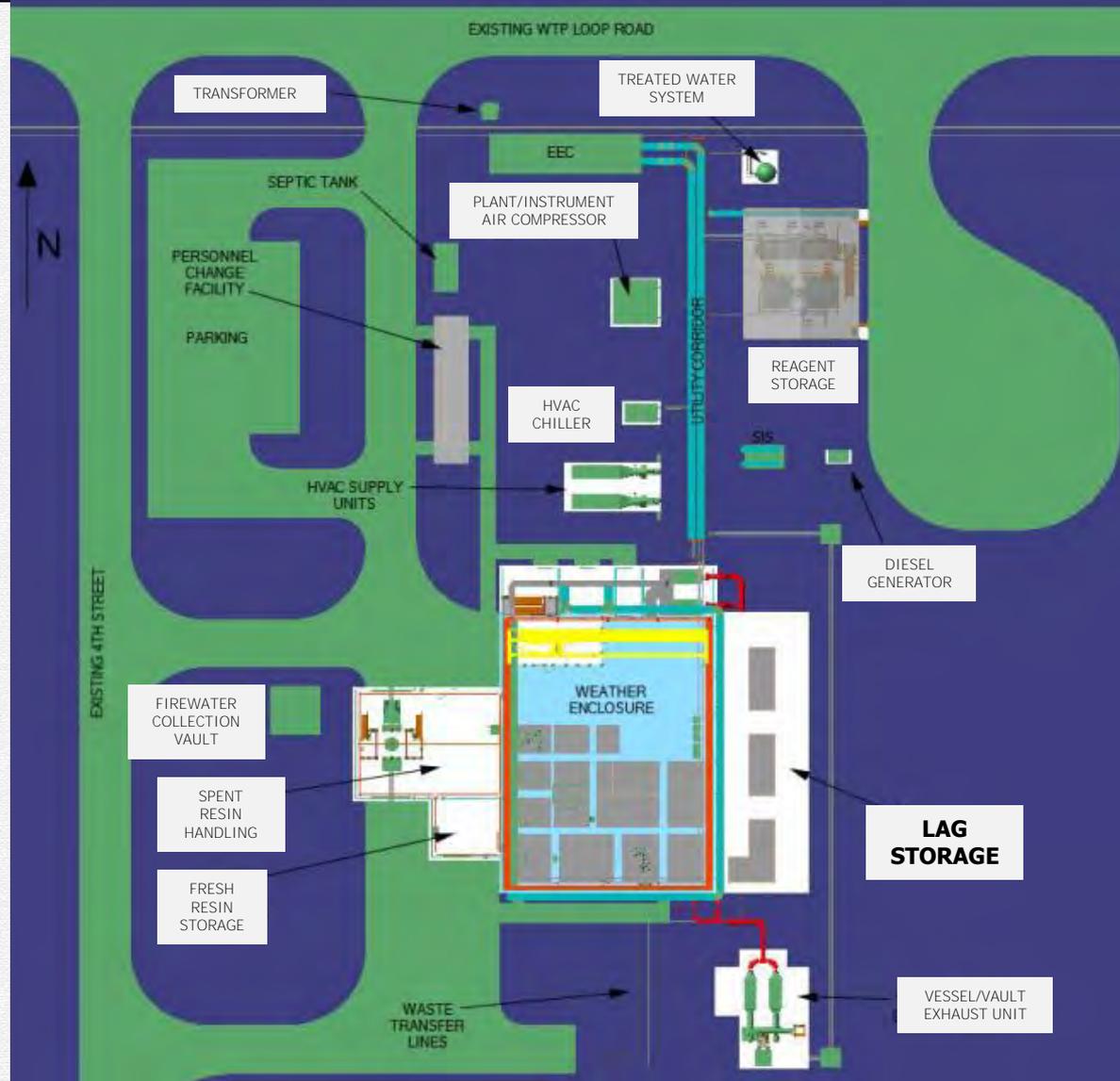






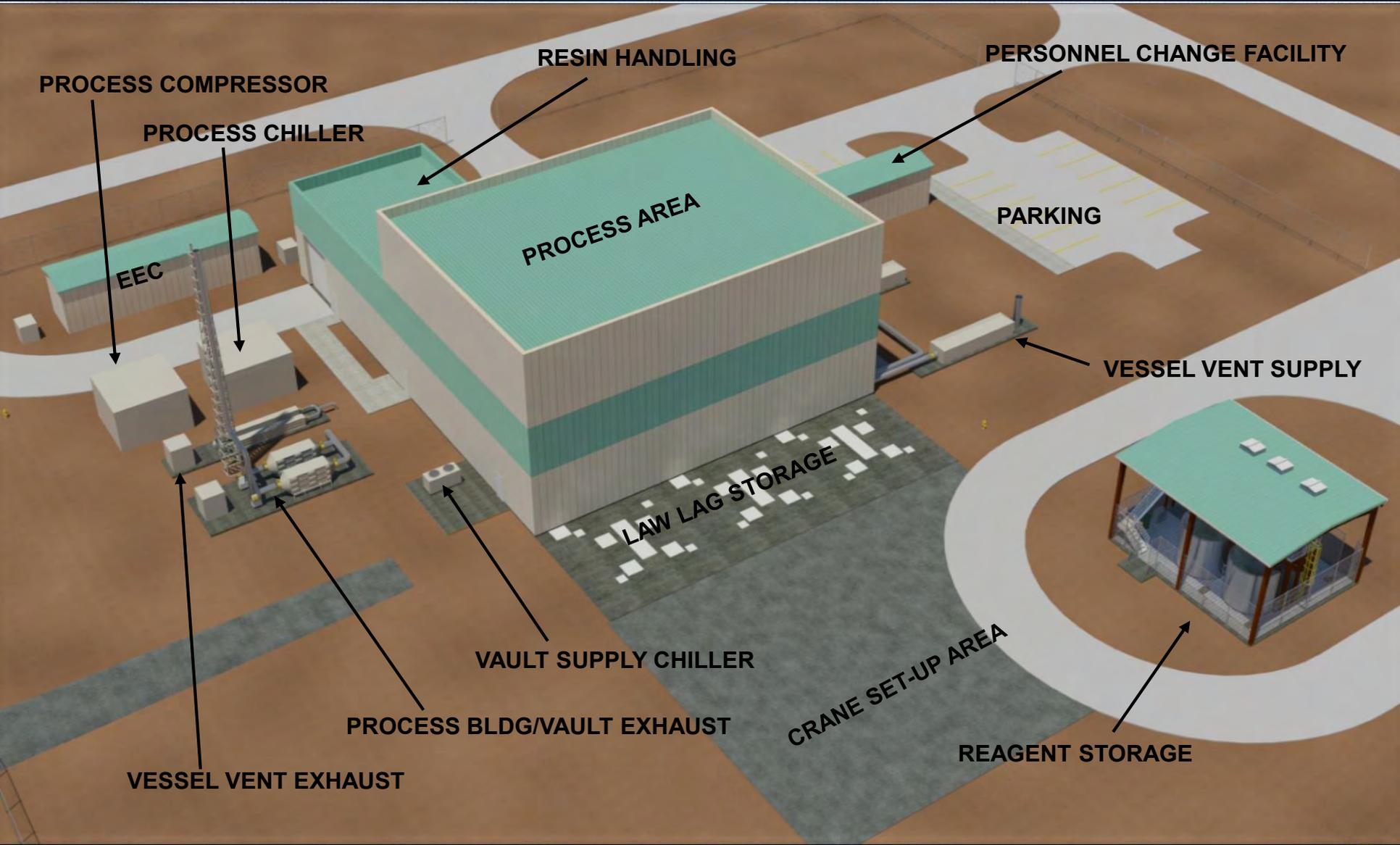


Low-Activity Waste Pretreatment System





Low-Activity Waste Pretreatment System





(\$ in Thousands)

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|--------------------|--|---------------------------------------|--------------------|-------------------|----------------------------|-------------------------------|
| ORP-0014 | Radioactive Liquid Tank Waste Stabilization and Disposition | \$ 522,000 | \$594,073 | \$38,589 | \$ 649,000 | \$ 649,000 |
| ORP-0014 | 15-D-409, Low Activity Waste Pretreatment System | \$ 23,000 | \$6,973 | 16,027 | \$ 75,000 | \$ 75,000 |
| Subtotal | Radioactive Liquid Tank Waste Stabilization and Disposition | \$ 545,000 | \$601,046 | \$54,616 | \$ 724,000 | \$ 724,000 |
| ORP-0060 | WTP – Subprojects A-D | \$ 563,000 | \$575,074 | \$171,278 | \$ 595,000 | \$ 595,000 |
| ORP-0060 | WTP – Subproject E | \$ 104,000 | \$126,604 | \$98,524 | \$ 95,000 | \$ 95,000 |
| Subtotal | Major construction – Waste Treatment and Immobilization Plant (WTP) | \$ 667,000 | \$701,678 | \$269,802 | \$ 690,000 | \$ 690,000 |
| Total – ORP | Office of River Protection Funding Summary | \$1,212,000 | \$1,302,724 | \$324,418 | \$1,414,000 | \$1,414,000 |

