Mission
To safely manage the waste in Hanford’s underground tanks while delivering the waste treatment capability needed for waste immobilization and final disposition.

Vision
To be a high-performing and innovative organization that is safety conscious, employee-focused, and committed to successfully achieving our environmental mission safely and efficiently.
Direct Feed Low-Activity Waste (DFLAW) Update
Non-radioactive Liquid Disposal system was the first building handed over from Startup to Commissioning.

- Handover of first building to Commissioning
- 227 total DFLAW plant systems and areas
  - 104 turned over to Startup
  - 35 handed over to Plant Management

*Numbers current as of July 1, 2018*
Concrete walls are complete for the Effluent Management Facility.

- Completed concrete walls for the Effluent Management Facility
- Startup of permanent plant power to the Low-Activity Waste (LAW) Facility
- Ecology approves operating permit for Analytical Laboratory
- Working to complete LBL* Physical Plant Complete construction

Washington State has approved an operating permit for the WTP Analytical Laboratory.

*LBL = LAW Facility, Balance of Facilities, and Analytical Lab
Safety Basis Approved for LAW Facility

ORP and Bechtel participated in a DOE Safety Evaluation Report signing ceremony, which signified approval of the Low-Activity Waste Facility Documented Safety Analysis.

DOE approves the LAW Documented Safety Analysis
Lab Demonstration Successfully Vitrifies Hanford Tank Waste

Scientists convert radioactive waste into glass in a test platform at the Pacific Northwest National Laboratory designed to mimic the Direct Feed Low-Activity Waste system being constructed at Hanford.
Tank Farms Update
242-A Evaporator campaign in May created about 166,000 gallons of double-shell tank space
- Met a Consent Decree milestone with delivery of new spare reboiler
- Since beginning operations in 1977, the evaporator has removed more than 84 million gallons of liquid from tank waste
SX Farm evapotranspiration basin was finished in April. It will collect evaporator water drained from new interim surface barriers to be installed later this spring over SX Tank Farm.

SX Farm evapotranspiration basin, left, is roughly the size of two-and-a-half football fields.
More than 9 million gallons of waste water has been processed at the Effluent Treatment Facility since the facility restarted in May 2016.

Work is underway to replace the second* fabric cover for the Liquid Effluent Retention Facility's (LERF) three large storage basins (Basin 42).

New LERF cover is expected to be installed by end of summer.

Each of the LERF basins is permitted to hold ~7.8 million gallons of material.

*Note: The cover for LERF Basin 43 was replaced last summer.
Testing additional engineered controls
- Nucon thermal oxidation
- Strobic Air technologies

- Full-face air-purifying respirators approved in SY and AP farms for non-waste-disturbing work

- Working with HAMTC and third-party experts to expand use of air-purifying respirators in other double-shell tank farms

- Planned stack extension for AW Farm
Tank Integrity Program Update
Primary objectives of the DST Integrity Program include:

- Maintain DSTs to safely store and transfer mixed radioactive waste for treatment
- Monitor tank integrity to inform management decisions
- Monitor tank corrosion

DST Integrity Program scope includes:

- Primary tank wall and annulus floor inspected (video every ~3 years, ultrasonic every ~10 years)
- Waste chemistry corrosion control laboratory testing
- Waste chemistry sampling and adjustments for corrosion mitigation
- Periodic testing, evaluation, certification of ancillary equipment (e.g., valve pits, piping)
- Structural analysis and studies for thermal, operating, and seismic loads
- Periodic testing and integrity assessment of support facilities such as the 242-A Evaporator
AY-101, AZ-101, and AZ-102 may have held waste with chemistry similar to AY-102.

The results of this study should not be interpreted as indicating that any of the DST’s are currently leaking, or will leak, from the primary liner to the secondary liner, or from the tank to the environment.

**Current actions:**

- Evaluating available information to assess possible implications for other tanks
- Performing core sampling of tank bottom layers to evaluate local conditions
- Revising chemistry control testing and program to improve protection against pitting corrosion
- Developing tank bottom inspection tool to provide visual and volumetric examination capability
- Identify additional characterization needs and to develop strategies to minimize the risk of leakage

High definition visual of bottom of AY-102 indicated severe pitting – at least seven failure points have been identified.
Secondary Liner Analyses

- UT scans of annulus floor began following AY-102 and as recommended by Tank Integrity Expert Panel (TIEP)
- 9 of 11 tanks tested show reduction from nominal
- Next steps include
  - Protecting DST secondary liner exteriors from water intrusion and humidity
  - Evaluating effectiveness of application of corrosion inhibitors
- Evaluation of potential tank repair techniques underway for localized areas of corrosion

Above: Close up of secondary liner

Approximate Annulus UT Inspection Area

Riser 31 - 176"  Riser 30 - 301" Red - Thinnest Blue - Nominal
Comprised of experts from a variety of private and government organizations, including national laboratories

Meets at least once a year

Provide independent advice and recommendations on existing and emerging tank integrity issues with focus on safety

Last meeting was June 27-28

Current Members
- Andy Duncan, SRNL
- Brenda Garcia-Diaz, SRNL
- Russ Jones, GT Engineering
- Glenn Light, Southwest Research Institute
- Leon Stock
- Mike Rinker, PNNL
- Bob Sindelar, SRNL, Vice Chair
- Todd Martin, Chair/Facilitator

Tank Integrity Expert Panel met in June in Richland.
Engaged in all facets of Hanford Tank Integrity including emerging technical findings

In recent years, the Panel has assisted with decisions regarding the following major areas as well as many others:

- Forensic examination of tank AY-102 failure mechanisms and repair/reuse decision
- Chemistry control and treatment of AY-102 annulus waste
- Expansion of secondary liner examinations and evaluation of mitigation options
- Waste chemistry control program corrosion testing to understand and mitigate pitting corrosion of the DSTs
- Primary tank bottom technology development of visual and volumetric solutions
IQRPE Assessments

- **Independent, Qualified, Registered Professional Engineer (IQRPE)**
  Assessments are conducted on a periodic basis in addition to the ongoing integrity programs at Hanford
- Must be performed by IQRPE and “certified” that the “system will not collapse, rupture or fail”
- **DSTs**
  - 2016 final report issued - no findings, 24 recommendations
  - DST system is fit for use and reassessment recommended in 10 years (2026)
- **SSTs**
  - Structural assessment only
  - 2002 assessment found all SSTs structurally sound until 2018, but with no guarantee of leak integrity
  - Reassessment of structural integrity is in process with report to be issued this fiscal year (TPA Interim Milestone M-045-91I, due 9/30/2018)
Waste Treatment Plant Update
• High-Level Waste (HLW) Facility
  o Deliver active plant equipment procurements
  o Ramp up engineering design activities

• Working to resolve final three Pretreatment (PT) Facility technical issues by end of FY2018

The Pretreatment Facility (above) and the High-Level Waste Facility (below).
"Protecting our workers, the public, and the environment"