



The Liquid Waste Processing Facilities include the Liquid Effluent Retention Facility (above) and the Effluent Treatment Facility (below).



Upgrade of the Effluent Treatment Facility to enhance reliability during direct-feed low-activity waste operations.

The U.S. Department of Energy and contractor Washington River Protection Solutions are managing and upgrading the Liquid Waste Processing Facilities at the Hanford Site in southeastern Washington state to prepare for waste treatment in support of Hanford’s Direct-Feed Low-Activity Waste (DFLAW) Program.

Background

The Liquid Waste Processing Facility (LWPF) is comprised of the following systems that work together to fulfill its mission for the Hanford Site:

- Liquid Effluent Retention Facility (LERF): a set of retention basins designed to store liquid waste until it can be processed at the Effluent Treatment Facility
- Effluent Treatment Facility (ETF): a processing plant where chemical and radioactive contaminants are removed from the liquid waste
- State-approved Land Disposal Site (not pictured): a system used for discharging verified treated effluent from the ETF to the environment
- Treated Effluent Disposal Facility (not pictured): a system used for discharging nonhazardous Hanford waste to two state-approved infiltration basins

Mission

The facilities will store, treat and dispose of large volumes of liquid waste from the Hanford Site as the last step in the cleanup process. Upon startup of the Waste Treatment and Immobilization Plant, LWPF operations will expand to manage liquid waste from the plant’s Effluent Management Facility.



An additional electrical house was added to provide power to new facility infrastructure needed to support direct-feed low-activity waste operations.



The Effluent Treatment Facility load-in building will enhance facility throughput during direct-feed low-activity waste operations.



Liquid Waste Processing Facilities (cont.)

Processing Operations

Liquid waste from the LERF is processed through the ETF main treatment train, which includes treatment systems designed to remove or destroy dangerous organic and radioactive constituents from the waste. The treated waste is then sent to verification tanks where it is sampled, analyzed and verified to meet release criteria. Once verified, the waste is discharged under a state waste discharge permit and approved petition to the State-approved Land Disposal Site. The treated waste is then discharged as nonhazardous waste. Secondary waste from these treatment processes is concentrated and dried into a powder in the ETF secondary treatment train. The resulting powdered waste is packaged in 55-gallon drums for disposal at Hanford's Environmental Restoration Disposal Facility.

LWPF Support During DFLAW

The Direct-Feed Low-Activity Waste (DFLAW) Program at the Hanford Site integrates individual projects, facilities and infrastructure upgrades, with involvement from Hanford's contractors in a coordinated effort to retrieve, treat and immobilize low-activity tank waste. As a component of this process, the LWPF mission will expand to manage liquid waste from the Waste Treatment and Immobilization Plant's Effluent Management Facility during DFLAW operations.

To prepare for this new waste stream during DFLAW, the LWPF requires the following:

- Installation of new ETF treatment systems
- Reliability and throughput improvements at the ETF and LERF
- Completion of LERF readiness review and authorization for startup
- Revisions and updates to regulatory documents (e.g., permits, delisting criteria, *National Environmental Policy Act* documentation)



A worker inspects the main treatment train on the process floor of the Effluent Treatment Facility.

