

# Class 2 Permit Modification for LERF and ETF Decontamination

*Take Action!*

*Track Tank Waste from Start to Finish*

*COMMENT DEADLINE: MON DEC 27, 2021*



The U.S. Department of Energy is gathering your comments on a permit modification for how and when to decontaminate the Liquid Effluent Retention Facility (LERF) basins that hold contaminated liquid, and the Effluent Treatment Facility (ETF), which treats that liquid.

This permit modification implements new processes for cleaning the LERF Basins and ETF after certain types of liquid waste have been stored and treated in them.

Because certain types of contaminants must be kept separate, sometimes the LERF Basins and ETF will need to be washed with water before new contaminants can be accepted for storage or treatment.

Waste will be sampled and characterized before being accepted at LERF and ETF. Before flushing a LERF basin or ETF that needs to be decontaminated, waste will be sampled to determine how much water needs to be used to remove the contaminants. After flushing, the LERF Basin or ETF is ready to accept new liquid waste. The flushing water will be treated at ETF after the cleaning process.

LERF and ETF have been more minor players in Hanford cleanup, but that is about to change as the Waste Treatment Plant (WTP) gets ready to start treating tank waste. Two of the four LERF basins will be dedicated to WTP liquids.

LERF and ETF have historically processed 1-4 million gallons of liquid waste per year, but with the WTP fully operating, this may increase to 4-8 million gallons per year.

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## WHERE IS THE LIQUID WASTE COMING FROM?

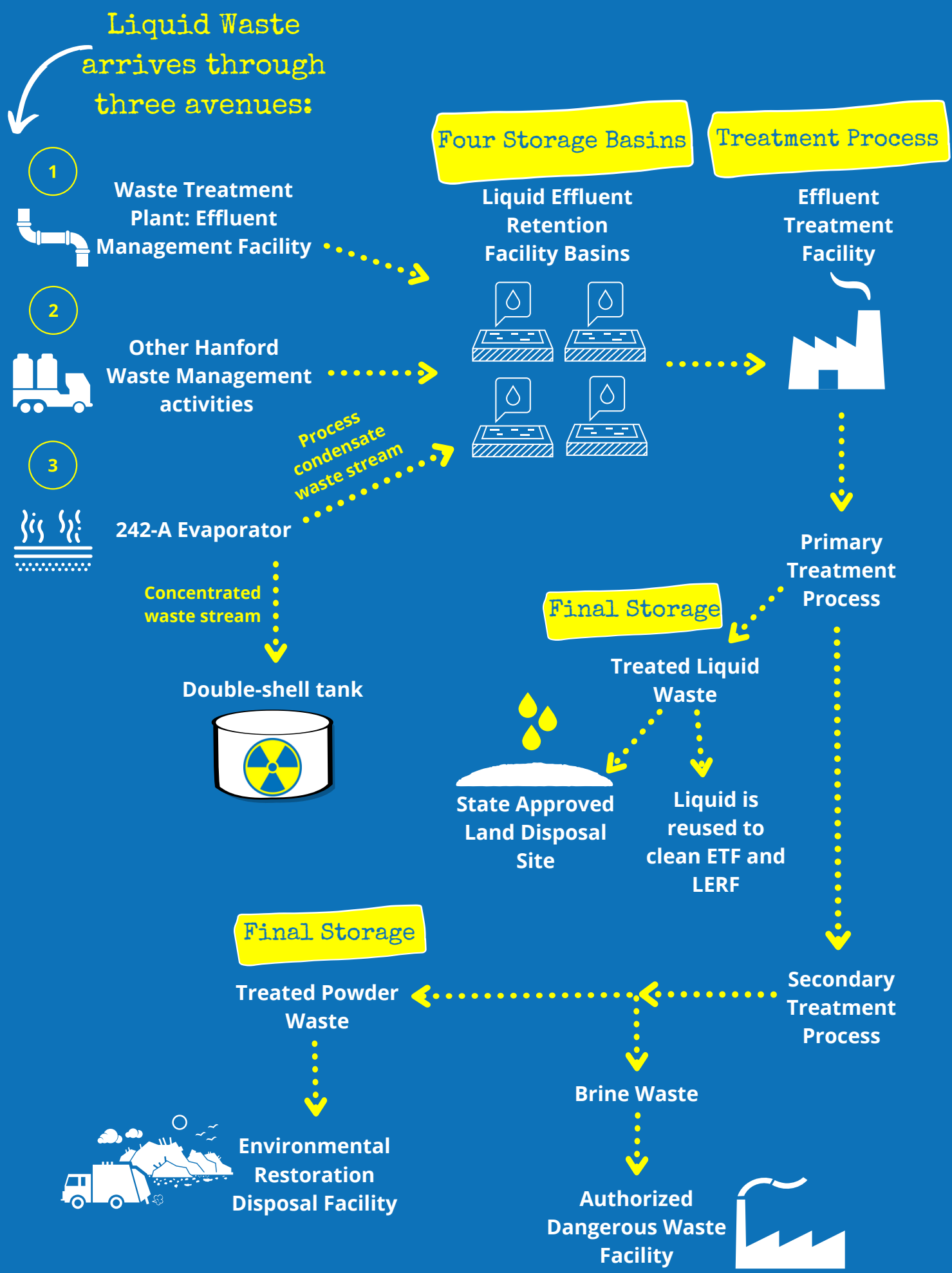
LERF and ETF are facilities located in the 200 East Area. They store and treat the leftover liquid wastes from different facilities at Hanford that are heavily contaminated with chemicals, but aren't highly radioactive.

- *Waste Treatment Plant (WTP) Effluent Management Facility (EMF):* Low-activity waste will be vitrified (turned into glass) at the WTP, leftover liquid waste from vitrification will be concentrated at EMF (similar to the 242-A evaporator) and remaining liquid sent to LERF & ETF.
- *242-A Evaporator:* Imagine boiling a pot of water for a long time. The amount of water in the pot will reduce as it evaporates. The 242-A Evaporator works the same way, except with tank waste. The waste that turns into steam is captured and transferred to LERF, while the reduced liquid waste is sent to a double shell tank for temporary storage.
- *Liquid Waste from Other Parts of Hanford:* Groundwater from pump and treat in 200 West Area, water from spent fuel storage basins at old reactors, lab waste from sampling, leachate from landfills, and other waste from cleanup and waste management go to LERF & ETF for treatment.

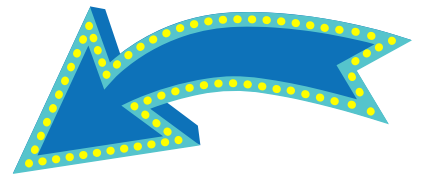
## HOW ARE LIQUIDS TREATED? WHERE DOES THE WASTE GO?

- **Inside ETF, liquid waste passes through a treatment system based on the contaminants present. Following treatment, the liquid is sampled. If contaminants are gone, waste is delisted (no longer considered dangerous) and either:**
  - a. **discharged to the ground at the State Approved Land Disposal Site (SALDS) or,**
  - b. **used to clean out LERF or ETF, then treated again and sent to SALDS**
- **If contaminants are still present, the liquid waste moves through the secondary treatment process where:**
  - a. **waste in powder form is disposed of at the Environmental Restoration Disposal facility (ERDF) at the Hanford site.**
  - b. **brine solution is transferred to an authorized dangerous waste facility for further treatment (offsite, right now Perma-Fix Northwest)**

# HOW DOES LIQUID WASTE MOVE THROUGH LERF AND ETF?



# HANFORD CHALLENGE SUGGESTED COMMENTS



## Increase Accessibility and Transparency of Public-Facing Materials:

U.S. DOE's virtual public meeting and materials were confusing and explanations were full of jargon and unclear terminology. Please design your meetings to be accessible to the public. Provide clear, plain language explanations including synonyms or multiple descriptions to describe something in basic terminology. The goal of a public meeting is to engage the public and provide a clear explanation of the comment period. *(For example: At the meeting on 11/30/21 it took multiple rounds of Q&A to translate and understand what was meant by "decontamination means removing waste codes.")*

## Sample the Liquid Waste "Heel" after Decontaminating the Basin:

A 550,000 gallon heel of liquid waste is left in the LERF Basins after each decontamination cycle. The amount of flushing water is calculated ahead of time to ensure the types of waste are adequately removed. Instead of relying solely on the amount of flushing water, U.S. DOE should also test the heel after cleaning the basin to validate that remaining waste concentrations meet the standard to be able to introduce new types of waste to the basin.

## Don't Send ETF Brine to Perma-Fix Northwest:

Brine coming out of ETF is intended for treatment at an authorized dangerous waste facility, which means U.S. DOE could send the brine to Perma-Fix NW. U.S. DOE should identify the facility and verify that the brine is acceptable under the authorized facility's permits. If there is no facility with an active, valid permit, U.S. DOE will have an orphan waste, meaning it has no disposal path. Brine can generate toxic gases, such as ammonia, when it is treated. High concentrations of ammonia pose a fire and explosion hazard, especially in confined spaces. Sending brine to Perma-Fix NW, a facility with a history of worker overexposures and safety issues including fires, puts nearby communities at risk and is a major concern.

## Resources

- [U.S. DOE Fact Sheet](#)
- [LERF/ETF Permit Application](#)
- [Presentation from U.S. DOE Public Meeting on Nov 30, 2021](#)(video link)
- [Hanford Challenge comments](#)
- Hanford Challenge [suggested public comments](#)
- Hanford Challenge [report on Perma-Fix Northwest "Risky Business at Perma-Fix Northwest"](#)

## SUBMIT COMMENTS

**electronically** via the online portal by midnight on **Monday Dec 27th**