

Highly radioactive spill near Columbia River in E. Washington worse than expected

By Annette Cary Updated July 01, 2023 10:56 AM

Read more at: <https://www.tri-cityherald.com/news/local/hanford/article276863128.html#storylink=cpy>

Richland, Washington, USA -- Tri-City Herald

The spill of highly radioactive waste beneath a building on the Hanford nuclear reservation north of Richland and near the Columbia River is both deeper and broader than anticipated.

In a statement Thursday, the Department of Energy said the contamination in the soil at the Hanford 324 Building 1,000 feet from the Columbia River and a mile north of Richland is “much larger” than previously identified.

Now the Department of Energy is rethinking the cleanup plan for the spill discovered 13 years ago, with work crews making preparations for the excavation of the radioactive material over the past six years.

The spill of cesium and strontium in the soil beneath the 324 Building is so radioactively hot that it would be lethal to a worker on direct contact within two minutes, DOE has said previously.

Radioactivity in the contaminated soil has been measured at 8,900 rad per hour.

The plan has been to leave the 324 Building standing to act as a barrier to prevent precipitation from reaching the underground contamination and driving it closer to the groundwater, which moves toward the Columbia River.



Workers started preparing to clean up a highly radioactive spill beneath the Hanford site 324 Building near Richland and the Columbia River in 2017. The spill was recently found to be much larger than expected. Courtesy Department of Energy

Work began in 2017 to stabilize the building and the soil beneath it so a remotely-controlled excavator could be used within the building to dig up the highly contaminated soil beneath it.

Now DOE is considering a more costly and time-consuming cleanup plan that calls for tearing down the approximately 58-year-old building and building a containment superstructure over the waste site and then digging up the contaminated soil. Details of the new plan have not been worked out.

DOE is discussing the possible new cleanup plan with its regulator on the project, the Environmental Protection Agency.

The spill has not reached the groundwater, where it would travel underground the short distance to the Columbia River, based on data from monitoring wells, DOE said Thursday.

324 Building used for research

The building at the south edge of the 580-square-mile Hanford nuclear reservation in Eastern Washington is in the site's 300 Area, where uranium fuel was fabricated for Hanford reactors that produced plutonium for the nation's nuclear weapons program from World War II through the Cold War.

The Hanford 300 Area also was used for research, and the 102,000-square-foot 324 Building was used for research and other projects with highly radioactive material from 1966 to 1996.



The 324 Building is one of the last structures still standing in the Hanford nuclear reservation's 300 Area just north of Richland. Courtesy DOE

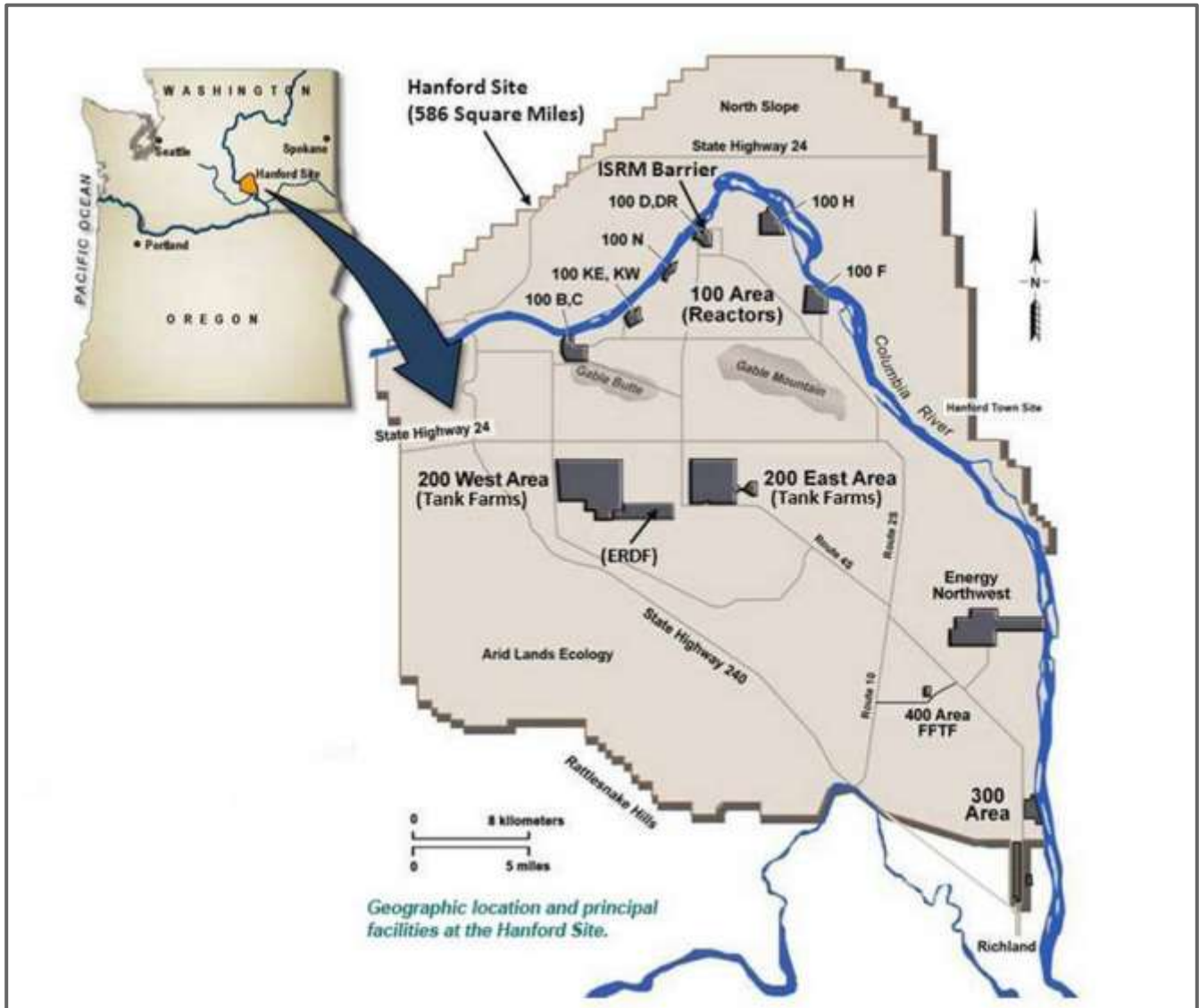
It was scheduled to be demolished by a legal deadline of September 2015, but as preparations were being made for demolition in 2010 the spill beneath the building was discovered.

In the 1980s one of the building's six hot cells was being used to prepare concentrated radioactive cesium and strontium from Hanford plutonium-production waste for Germany to use for testing of a repository for radioactive waste.

Hanford workers stood outside the hot cell and used controls to operate manipulators within the 30-foot-tall hot cell with 5-foot thick walls as they watched through leaded-glass windows.

At the time of the work for Germany the stainless steel liner on the floor of the hot cell was damaged, allowing the concentrated high level waste to leak into the soil beneath the building.

The bottom of the cell is about 42 feet above groundwater.



Hanford was used to produce plutonium for the nation's nuclear weapons program during World War II and the Cold War. Environmental cleanup is underway now. Courtesy Department of Energy

DOE planned to call the hot cell back into service to mount an excavator arm within it. The floor of the hot cell would be cut away with a remotely operated saw and then the excavator would bring up the contaminated soil through the hot cell.

Using the hot cell was planned to shield Hanford workers on the project from the radiation in the waste.

Excavating contaminated soil with the building standing required 13 structural supports, called micropiles, to be installed in the soil beneath the building to stabilize its foundation.

Radioactive spill discovered

After that was completed in the fall of 2022, the next step for DOE contractor Central Plateau Cleanup Co. was to install underground horizontal supports into the soil outside the footprint of the building by injecting concrete-like grout into the soil to form blocks. The intent was to help prevent the sloughing of soil during excavation of contamination.

As that work began, contaminated soil was discovered in a wider area beneath the building, where it was not expected.

DOE paused work in April, and Pacific Northwest National Laboratory, the DOE national laboratory in Richland, was called upon to help Hanford officials understand the extent of the underground contamination.

PNNL confirmed the findings of the Hanford contractors that the spill was both broader and deeper than thought when the plan to excavate it from within the hot cell was developed.

Work on that plan was initially done by previous DOE contractor CH2M Hill Plateau Remediation Co. before its contract expired. Central Plateau Cleanup Co. took over work near the start of 2021.

A much larger volume of contaminated soil would need to be removed than originally planned, PNNL concluded. The excavator arm to be mounted in the hot cell for excavation could not reach all the contaminated soil, with some of it deeper than it could reach.



Workers at Hanford have been preparing to clean up a highly radioactive spill under the 324 Building for six years. The spill's contamination recently was discovered to be significantly larger than expected. Courtesy Department of Energy

DOE began to rethink its cleanup plan for the spill not only because of the larger excavation required, but also because of concerns about the aging building.

Equipment failures there have highlighted the condition of the building and the cost to continue to maintain and do repairs there while using one of its hot cells to excavate waste.

However, DOE said the building currently is in a safe and stable configuration. The contaminated soils at it have remained stable for decades, it said.

New plan for Hanford spill

The new plan DOE is considering is intended to be “safer for the workforce, protective of the environment and effective in completing the mission,” Hanford workers were told in an employee message Thursday.

“While this change in approach will take longer to complete, it represents a safer path to remediation and aligns with current budget profiles through fiscal year 2025,” the message said.

As a precaution, two new monitoring wells will be installed to continue to check for any underground spread of the cesium and strontium.



Workers have been practicing using remote-operated equipment at a mock-up of the 324 Building to prepare to dig up highly radioactive waste. Bob Brawdy Tri-City Herald file

The proposed new cleanup plan would start with deactivating the 324 Building, including fogging ventilation systems to stabilize contamination, filling the building’s hot cells with grout and turning off heat and power.

Then the building would be torn down to its foundation and the slab of the foundation possibly extended.

The extended slab would serve as a larger barrier to protect it from rain and snowmelt that could drive the radioactive contamination deeper toward groundwater.

Then a containment superstructure would be built over the waste site. The design of the superstructure has not started.

With it in place, contaminated soil then would be dug up.

FAIR USE STATEMENT from Citizens for Human Survival

This document may contain copyrighted material, the use of which has not been specifically authorized by the copyright holders. This material is made available as a way to advance research and teaching related to public health and nuclear contamination issues, among other salient political and social concerns. Through context, critical questioning, and educational framing, the forwarders of this document intend to create a transformative use of copyrighted media. The material is presented for entirely non-profit educational purposes. There is no reason to believe that the featured material will in any way negatively affect the market value of any copyrighted work. For these reasons, we believe that this document is clearly covered under current Fair Use copyright case law.

We do not support any actions in which the contents of this document are used for purposes that extend beyond Fair Use. If you wish to use the materials included here for any other purpose, please contact the copyright holder