
Control Room at Hanford's B Reactor

# 2023 OREGON - HANFORD POLICY UPDATE

Submitted to the

**OREGON LEGISLATURE**

by the

**OREGON HANFORD CLEANUP BOARD**

and

**OREGON DEPARTMENT OF ENERGY**

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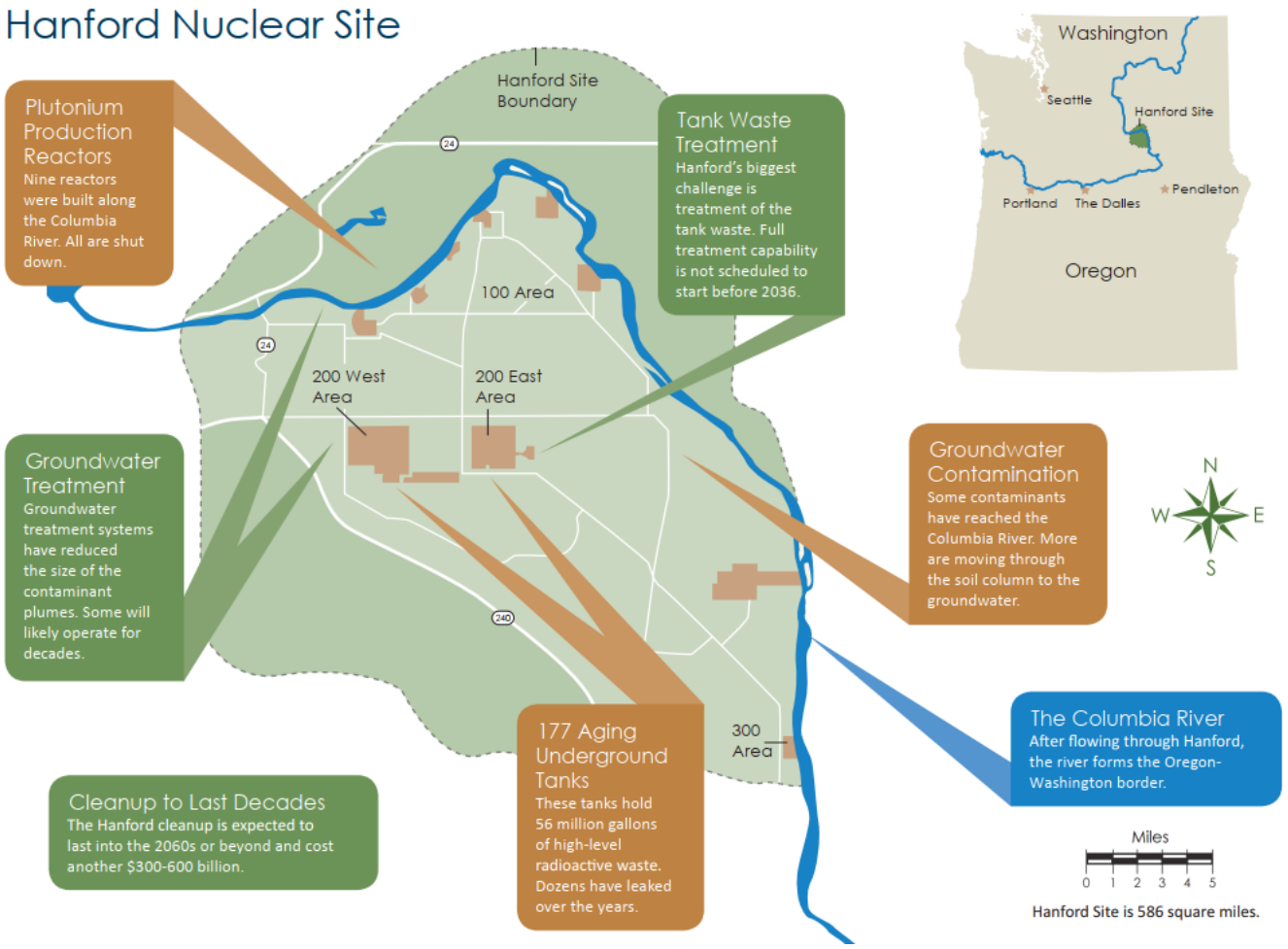
## EXECUTIVE SUMMARY

The federal government spends approximately $3 billion a year to clean up and maintain the Hanford Nuclear Site, just 35 miles north of the Oregon border in southeastern Washington State and adjacent to the Columbia River. The contamination is a legacy of plutonium production starting with the Manhattan Project and then continuing as part of the national security mission until 1989. Cleanup is expected to continue for generations at a cost of hundreds of billions of dollars. This toxic legacy poses a threat to the Columbia River, and there is a continued risk that a nuclear incident at the Hanford site or with transportation of radioactive material could affect the health, safety, and livelihood of Oregonians.




Because of Hanford's proximity to Oregon and the Columbia River, the state has a critical role in the cleanup process. Oregon's Hanford priorities and policies are established and communicated by the Oregon Hanford Cleanup Board and the Oregon Department of Energy's Nuclear Safety and Emergency Preparedness Division. This report provides a brief history of the Hanford site, summarizes actions taken in 2023 by the OHCB and ODOE, and provides a high-level look ahead at expected developments in 2024.

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*A herd of elk on the Arid Lands Ecology Reserve, an uncontaminated portion of the Hanford Site that is protected from future development.*

## THE HANFORD SITE AND OREGON'S ROLE

The Hanford site is located in southeastern Washington State, about 35 miles north of the Oregon border and adjacent to the Columbia River. Hanford is widely considered one of the most radioactive sites in the western hemisphere, and has been described as being a larger environmental cleanup than all the other Federal Superfund sites combined. Oregon's role in the Hanford cleanup, in short, is to focus cleanup decisions on protection of the Columbia River — to ensure that the radioactive legacy left from plutonium production does not negatively affect the health of Oregonians or the ecosystem that makes Oregon the beautiful and fertile place we call home.

*The first large-scale nuclear reactor ever built - the B Reactor.*

### Manhattan Project and WWII

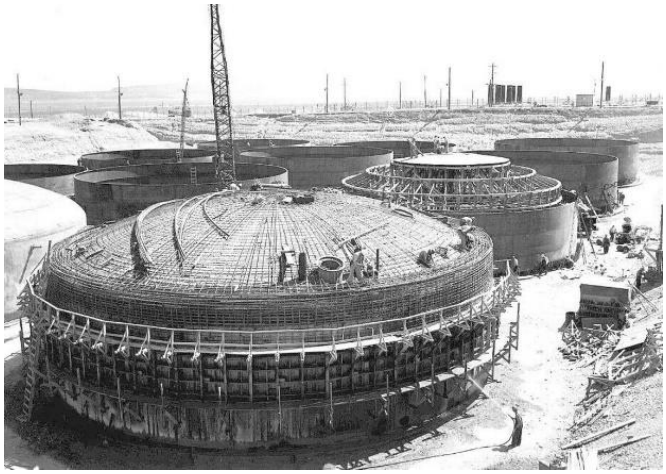
The first nuclear reactor was constructed and operated in Chicago in November 1942. The next year, the U.S. Government evicted 1,500 settlers and Native American tribes from the ceded tribal land area now known as the Hanford Reservation. By September 1944, a monumental construction project was complete and Hanford began creating plutonium — and along with it, dangerous wastes. Uranium fuel rods were fed into massive nuclear reactors that used Columbia River water for cooling. The spent fuel was then dissolved to extract plutonium. During the World War II years, approximately 60 pounds of plutonium were created, enough to make four atomic bombs. One of the bombs was used in the first-ever nuclear explosion at the Trinity Test in New Mexico. A second plutonium bomb was dropped on Nagasaki, Japan, and would change the global landscape forever (another nuclear bomb was also dropped on Hiroshima; this was an uranium bomb, not plutonium, which was enriched at Oak Ridge in Tennessee). Creating those weapons also had an irreparable effect on the environment of the Pacific Northwest. Creating plutonium is a toxic, waste-intensive process that had never been done before. For every pound of plutonium created, more than 4,000 pounds of uranium was needed. And, in short, everything that wasn't plutonium became waste.

Scientists and engineers were inventing a new science in an effort to end World War II, and environmental regulations that are in place today did not yet exist. Hanford production operations resulted in the dumping of millions of gallons of chemical and radioactive wastes into the hundreds of feet of sand and gravel above the water table, using the environment as a disposal media. Solids were buried in unlined trenches and covered with soil using bulldozers.

*More than 50,000 construction and tradespeople lived in make-shift camps on the site. Very few of them knew the totality of the project they were building.*

## The Cold War

Following the end of WWII, plutonium production at Hanford increased as part of the arms race and national security mission associated with the Cold War. New extraction methods brought new waste chemistries to Hanford, all of which were blended in 177 basketball-court sized underground storage tanks. The carbon steel tanks held up to a million gallons of material and were designed like septic fields – as they filled up, the waste would cascade into the next tank, and then the next one, and then into a covered pit called a crib, where the waste soaked into the soil. Most of the tanks still hold waste today but are well past their design life, and many are known or suspected to be leaking. The national security mission of plutonium production continued until 1989, and 74 tons — fully 2/3 of all of the plutonium created for the U.S. nuclear arsenal — was made at Hanford. From the Manhattan Project through the end of plutonium production, it is estimated that more than 440 billion gallons of liquid waste were dumped in Hanford soils for disposal, creating large groundwater contamination plumes.



*The underground storage tanks under construction. When completed, the top of the tank was covered by 8 feet of soil, and the bottom is about 40 feet below ground.*

## The Cleanup Mission

The last reactor at Hanford was shut down for good in 1987, and the mission shifted to cleanup. A legally binding cleanup framework, the "Tri-Party Agreement," was signed in 1989 by US DOE and its regulators, the Washington State Department of Ecology, and the US EPA. The highly technical cleanup is expected to continue for multiple decades and cost hundreds of billions of dollars to complete. Once active cleanup is complete, radioactive material will remain at Hanford for centuries or even millennia. Oregon's technical staff continue to advocate for the most protective, effective, and expeditious cleanup possible at the site, minimizing the long-term risk to the Columbia River and the region.

In the early 1980s, **Hanford was considered as a candidate for a national high-level waste deep-geologic repository**. That possibility caused then-Governor Atiyeh to sue the federal government. The settlement that was reached in that suit was the beginning of the funding for Oregon government technical staff who review Hanford policy on behalf of the State.

## WHAT IS THE OREGON HANFORD CLEANUP BOARD?

The Oregon Legislature formed the Oregon Hanford Waste Board in 1987, renaming it the Oregon Hanford Cleanup Board in 2003 (ORS 469.573, 574). The Oregon Hanford Cleanup Board serves as the primary body for Oregon policy discussions on the disposal of high-level radioactive waste in the northwest. The OHCB is chartered to recommend a state policy to the Governor and to the Legislative Assembly, and may make policy recommendations on issues other than high-level waste disposal in the northwest after consultation with the Governor. These other Hanford issues include, but are not limited to: defense wastes, disposal and treatment of chemical waste, and plutonium production.

The OHCB is comprised of 14 voting members and six nonvoting/advisory members:

**Voting Members**

- Ten public members appointed by the Governor, one of whom shall be a representative of a local emergency response organization in eastern Oregon
- Oregon Department of Energy director or designee
- Oregon Water Resources Department director or designee
- Governor's representative
- A representative of the Confederated Tribes of the Umatilla Indian Reservation

**Advisory/Nonvoting Members**

- Three members of the Oregon Senate appointed by the President of the Senate
- Three members of the Oregon House of Representatives appointed by the Speaker of the House

OHCB meetings serve as a forum and venue for public information, education, and involvement in the Hanford cleanup, and are the primary point of contact for dissemination of information from and about Hanford to the public. A representative from OHCB also serves on the Hanford Advisory Board, which is the site-specific Federal Advisory Committee Act board advising the Tri-Party Agreement agencies.

## OHCB ACTIVITY IN 2023

In 2023, OHCB held three meetings.

- January 2023 (remotely),
- May 2023 (in Hood River, OR)
- October 2023 (in Richland, WA). The October meeting also included a visit to the Manhattan Project National Historic Park B Reactor, which is on the Hanford site.


*OHCB members, ODOE staff, and guests pose for a picture in front of the B Reactor.*

OHCB meetings are open to the public and are advertised and noticed by ODOE to the public via our website, email distribution, and social media. All meetings since May 2022 are recorded and posted to the OHCB website. These meetings represent an opportunity for Oregonians to regularly engage with US DOE, EPA, and Washington State on progress and emerging issues at Hanford. Through the meetings in 2023, members received periodic updates and asked questions of the Hanford agencies.

At the Hood River meeting, OHCB hosted a panel discussion on future land use, which included opportunities to engage with representatives from the Yakama Nation and Nez Perce Tribe, as well as the Confederated Tribes of the Umatilla Indian Reservation. Tri-Party Agreement agency representatives, a representative of the Tri-City Development Council, and ODOE Staff were also invited to participate in the discussion.

At the October 2023 meeting, which was held in Richland at the Laser Interferometer Gravity Observatory (LIGO), OHCB received briefs on technology from the head of LIGO, project leads at the Pacific Northwest National Laboratory, and Tri-Party Agreement agencies.

OHCB and ODOE co-wrote a letter to Congress presenting the importance of adequately funding DOE to complete the Hanford Cleanup mission.

## ODOE HANFORD ACCOMPLISHMENTS IN 2023

The Oregon Department of Energy's Nuclear Safety and Emergency Preparedness Division (NSEP) responsibilities related to the cleanup and restoration of the Hanford Nuclear Reservation include policy and technical review, Natural Resource Damage Assessment, emergency response planning,

transportation corridor management, waste disposal regulation, and public engagement, as well as staffing the Oregon Hanford Cleanup Board.

The Nuclear Safety and Emergency Preparedness division of ODOE serves in a critical role for Oregon, coordinating state response to radiological emergencies and ensuring public health and safety along transportation corridors. These activities extend beyond Hanfor,d including collaboration with western states, the Columbia Generating Station nuclear power plant, Puget Sound Naval Shipyard, National Guard Civil Support Teams, and local jurisdictions. In 2023, ODOE also participated in scheduled nuclear disaster response drills and emergency exercises and conducted one inspection of a decommissioned submarine reactor as it prepared for its journey up the Columbia River for final disposal at Hanford. In 2023, four Nuclear Safety and Emergency Preparedness division team members became certified FEMA Radiological Operation Support Specialists, enabling Oregon to share its response expertise in the event of a nuclear event elsewhere in the country.

In 2023, Nuclear Safety and Emergency Preparedness division staff drafted formal comment on:

- The 2023-2028 Hanford 5-year Vision
- Analyses of Alternatives related to high-level waste treatment options
- Cleanup of the Fast-Flux Test Facility
- A treatment variance proposed by US EPA
- As noted above, ODOE staff collaborated with the OHCB to draft a letter to Congress reflecting the need for adequate funding for Hanford Cleanup

Nuclear Safety and Emergency Preparedness division staff also presented to the National Academies of Science on the supplemental treatment of low-activity waste and as part of a Scholar Series hosted by Hanford Challenge. These efforts reflect the Nuclear Safety and Emergency Preparedness division's advocacy for scientific integrity, effective and timely cleanup at Hanford, and for public engagement.

The Nuclear Safety and Emergency Preparedness division staff represents Oregon on the Hanford Natural Resource Trustee Council for the Hanford natural resources damages assessment process (the largest natural resources damage claim in history), the Hanford Advisory Board, the Northwest Interstate Compact for Low-Level Radioactive Waste Disposal, Waste Isolation Pilot Plant Transportation Advisory Group, State and Tribal Government Working Group, Western Governors Association, and provides staff support to the Oregon Hanford Cleanup Board.

In 2023, Nuclear Safety and Emergency Preparedness division staff participated in several virtual meetings and two in-person conferences of the State and Tribal Government Working Group, which brings together representatives from states and Tribes affected by US DOE sites or facilities associated with the production and cleanup of nuclear weapons. The Confederated Tribes of the Umatilla Indian Reservation, the Yakama Nation, the Nez Perce Tribe, and the Wanapum are among more than a dozen Tribes and Pueblos that are members of the State and tribal Government Working Group. In recent years, this group has focused on four priority issue areas: long-term stewardship; waste management; natural resource damage assessment and restoration; and tribal issues.

## KEY HANFORD-RELATED ITEMS TO WATCH IN 2024

- 324 Building – A research building close to the Columbia River and Richland has very high levels of radiation under its floor. The plan was to dig it up with robots, but in 2023, US DOE found more contamination out of the robot's reach. US DOE and its regulators are discussing a path forward to ensure that the river, the workforce, and the population in general are protected during cleanup. We expect a public comment period in 2024. For more information, please see ODOE's Blog post on the new contamination.

- Results of "Holistic Negotiations" – in Spring of 2019, US DOE and Washington State Department of Ecology began negotiations mediated by the U.S. Department of Justice. The negotiations have reached conceptual agreement on a holistic path forward for treatment and disposition of the Hanford tank waste. Results of the negotiations were released in May 2024, and a comment period will open in June and July. At the time of writing this report, staff are still reviewing the results and preparing to submit comments.

- Revision 9 of the Sitewide Resource Conservation and Recovery Act Permit – Most waste operations at Hanford are regulated via a site-wide Resource Conservation and Recovery Act permit. Revision 9 has been in process for nearly a decade and is expected in 2024. The permit is expected to be 20,000 or more pages and will include a single shell tank leak response plan for the first time.

- Preliminary Cleanup Decisions on the River Corridor – the last two of the major operable unit groups are scheduled to have investigation and feasibility reports completed in 2024. The draft proposed plans for the units ("100-K operable unit," which is the area associated with the former K-East and K-West reactors, and "100-N operable unit," which is the area associated with the former N-reactor) may be available for review by the end of calendar year 2024.

- Direct-Feed Low-Activity Waste Melter 2 Heat-up – The second of two melters has undergone heat-up in early 2024, and cold commissioning is underway. Once this melter is operational, the site is one step closer to immobilizing some of the low-activity (meaning, waste with lower levels of radioactivity that has met requirements to not be considered high-level waste) tank waste, which will then be permanently disposed at a special landfill at Hanford. Also of note, the cold commissioning process generates non-radioactive glass canisters. Following review by ODOE staff, these canisters were approved for disposal at Chemical Waste Management Northwest in Arlington, OR.

- Progress on The Test Bed Initiative – US DOE is expected to be granted a final treatment variance by the EPA, a preliminary step in disposing 2,000 gallons of "low activity" tank waste (meaning, waste with lower levels of radioactivity that has met requirements to not be considered high-level waste) outside of the Northwest. Commercial disposal facilities in Utah and Texas will each

receive 1,000 gallons of liquid waste, where it will be mixed with grout and solidified, then disposed at commercial shallow or near-surface disposal facilities in those states. The waste is not expected to be transported through Oregon as part of this effort. This is a potential departure from the planned vitrification of Hanford tank waste. As such, this initiative will be closely monitored by all parties for environmental safety and legal sufficiency.

## FOR MORE INFORMATION

The Oregon Department of Energy
550 NE Capitol Street NE
Salem, OR 97301
503-378-4040 | 800-221-8035
askenergy@oregon.gov
www.oregon.gov/energy