

# HANFORD COMMUNITIES

SPRING 2022 NEWSLETTER

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## FEATURED



## 'UNPRECEDENTED.' WHITE HOUSE CHANGES HANFORD SPENDING REQUEST TO CONGRESS

**Tri-City Herald** | Published June 8, 2022 | By Annette Cary, senior staff writer

The Biden administration has revised its budget request for the Hanford nuclear reservation to boost funding in an unprecedented step by the White House for the site.

Sen. Patty Murray, D-Wash., had repeatedly urged in public and private conversations with the administration that the federal government fully fund environmental cleanup of the 580-square-mile site in Eastern Washington.

It was used from World War II through the Cold War to produce nearly two-thirds of the plutonium for the nation's nuclear weapons program, leaving behind millions of gallons of radioactive waste and contaminated buildings, soil, debris and groundwater.

The Biden administration this week amended its request to Congress for Hanford funding in fiscal 2023 to boost its proposed budget by about \$191 million to just over \$2.6 billion. When the administration released its budget request for Hanford for the next fiscal year in late March it had proposed a cut from current spending of \$172 million.

> Read the full story on Tri-City Herald's website by clicking [HERE](#)

# GOV. INSLEE SAYS WHITE HOUSE MUST DO MORE TO AVOID RADIOACTIVE ‘CALAMITY’ AT HANFORD

Tri-City Herald | Published May 29, 2022 | By Annette Cary, senior staff writer



Governor Inslee inside Hanford's sample waste tank with WRPS chief engineer Karthik Subramanian.

In a worst case scenario, environmental cleanup of the Hanford nuclear reservation might not be completed for another 150 years, or possibly never, said Washington Gov. Jay Inslee. He warned the new director of the Office of Management and Budget at the Biden White House that Hanford site budgets need to be far higher to avoid disaster, meet legal obligations and prevent the nuclear reservation cleanup from continuing until as late as 2178, if not longer.

“As the earliest possible date for cleanup continues to extend farther into the future, the harms to the surrounding communities and the danger of catastrophic impacts to the Pacific Northwest are occurring right now,” Inslee, a Democrat, said in a May 23 letter to OMB Director Shalanda Young.

He pointed out that Hanford’s 149 single-shell tanks holding radioactive waste underground are between 58 and 78 years old. That’s far beyond the 20 to 30 years they were designed to safely hold waste safe groundwater that moves toward the Columbia River.

At least two of the Hanford tanks are known to be currently leaking radioactive and other hazardous waste into the ground. Five years ago, a tunnel storing highly contaminated equipment partially collapsed and the collapse of a parallel waste storage tunnel was averted at great expense two years later, he said.

“Each year that we delay compliant investment in Hanford Site cleanup, we must spend more to shore up failing infrastructure against immediate calamity,” Inslee said.

> [Read the full story on Tri-City Herald’s website](#) 

# HISTORIC EASTERN WA NUCLEAR REACTOR REOPENS FOR PUBLIC TOURS AT HANFORD

Tri-City Herald | Published May 17, 2022 | By Annette Cary, senior staff writer

The public can once again step inside the world’s first production-scale nuclear reactor, a facility that launched the atomic age. The Department of Energy is resuming free public tours of the historic B Reactor, part of the Manhattan Project National Historic Park at the Hanford site near Richland in eastern Washington.

Tours had been closed for two years during the COVID-19 pandemic. Registration is now open for tours beginning May 26 and continuing through November. Tours will be offered six days a week during the summer and on Memorial Day, Independence Day and Labor Day weekends.

> [Read the full story on Tri-City Herald’s website](#) 



# ECOLOGY DIRECTOR PUSHES FOR HANFORD FUNDING IN D.C. VISIT



Shared from U.S. Department of Ecology, March 21, 2022 | By Andrew Wineke, Communications Department

WASHINGTON, D.C. – Washington Department of Ecology Director Laura Watson visited the nation’s capital last week, urging the federal government to adequately fund cleanup of the most contaminated nuclear site in the nation.

Ecology estimates more than \$7 billion is required to keep Hanford Site cleanup on track for the next two years. This includes a budget of \$3.35 billion in fiscal year 2023 and another \$3.76 billion in 2024. While Watson was in Washington, D.C., President Joe Biden signed a \$2.7 billion appropriation for Hanford cleanup in 2022 - a record amount for the work.

“Senator Murray, Senator Cantwell and our champions in the House are working hard to deliver the funding we need to keep cleanup work at Hanford on track,” Watson said. “But the fact that the record funding for this budget still falls hundreds of millions below what is needed demonstrates the challenges ahead of us.”

Washington Gov. Jay Inslee praised the progress Congress made in the 2022 budget for Hanford, but cautioned that cleanup costs will grow without greater commitments in the years ahead.

“Without significant increases in funding in future budgets, we will continue to see delays in progress, heightened environmental risk, and it will ultimately require billions more in cleanup costs,” Inslee said.

From World War II through the Cold War, the Hanford Site produced more than 67 tons of plutonium – and untold millions

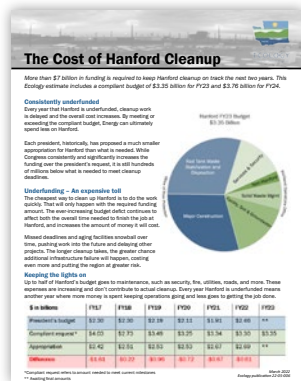
of tons of related radioactive and hazardous waste. When plutonium production ceased in 1989, the site’s mission shifted to cleaning up the massive amounts of waste and contamination our nation’s nuclear effort left behind.

While the federal government has long acknowledged its responsibility for cleaning up that toxic legacy and made legal commitments to do so in the Tri Party Agreement, presidential administrations of both parties have failed to request sufficient funding to keep the work on schedule, putting the onus on Congress to increase funding to meet the need.

As the state agency charged with overseeing the Department of Energy’s cleanup work in Hanford, the Washington Department of Ecology pushes the federal government to meet its commitments. In Washington, D.C., last week, Ecology Director Watson met with representatives from several federal agencies, elected officials, and officials from the Biden administration. Watson was joined by David Bowen, Ecology’s Nuclear Waste program manager.

Watson and Bowen shared five alternatives from the Department of Energy’s Analysis of Alternatives, a document detailing 18 cleanup scenario alternatives for tank waste treatment, including the estimated lifecycle cost and timeline to finish cleanup for each.

Although grouting the waste in the tanks – meaning filling them with a concrete-like mixture – is sometimes touted as a cheaper and faster way to clean up Hanford’s tank waste, Energy’s analysis demonstrates that grouting is not the fastest or least expensive option. No matter what scenario is selected, the analysis shows that Hanford funding needs to be significantly increased in order for Energy to complete the cleanup by the end of this century. ■



Click to see Ecology’s “The Cost of Hanford Cleanup” budget breakdown.

> To read the original article from Ecology, click [HERE](#)



*Florida International University research scientists Mackenson Telusma, left, and Anthony Abrahao deploy a pipe crawler during a field test at the Hanford Site.*

# HANFORD COLLABORATES WITH UNIVERSITIES ON ROBOTS TO EVALUATE TANK INTEGRITY

OFFICE OF ENVIRONMENTAL MANAGEMENT

Contributors: Jenna Kochenauer, Leonel Lagos, Daniel Martin

RICHLAND, Wash. – Robot technology is providing new ways to monitor the integrity of underground double-shell waste-storage tanks at the Hanford Site.

Under a cooperative agreement with DOE, Florida International University (FIU) recently worked with EM Office of River Protection (ORP) tank operations contractor Washington River Protection Solutions (WRPS) to test a miniature magnetic rover, deploying it at a tank in the site’s AP Tank Farm.

“It is always great to see the research that the students have been performing successfully deployed in the field,” said Genia McKinley, program manager for the DOE-FIU Cooperative Agreement. “It shows the capabilities of our students and the payoff for their hard work in real time.”

The rover underwent rigorous testing at FIU, followed by a final demonstration at a vendor facility in Richland, Washington. The demonstration showcased the abilities of the device and allowed field crews to familiarize themselves with the rover before deploying it over 50 feet deep into air cooling slots in the bottom of the tank.

Crews directed the rover as it shot video of both steel shells of Tank AP-105. The contractor’s tank integrity team will use the footage in their assessment of the structural integrity of the inner shell.

“We get excited about these kinds of projects,” said Glenn Soon, operations specialist with WRPS. “The university’s team worked with us to create this reliable, first-of-a-kind solution for tank inspections. Reaching the point of deploying the mini rover

successfully has been very rewarding, and the rover shows a lot of promise for use in our tank integrity monitoring program.”

The mini rover was one of two technologies FIU recently tested at Hanford. The second is a robot called a pipe crawler. It was designed to travel through pipes underneath waste tanks, using air pressure rather than a motor. For the demonstration, the crawler was outfitted with a mock-up radiation scanner unit to simulate future measurements of gamma radiation and a camera to shoot footage for visual inspections.



*The lead segment of a pipe crawler is equipped with a camera, mock-up radiation scanner and other sensors. A 3D printer was used to help build the crawler.*

“We had initially designed this crawler to clean transfer lines, and when we learned that WRPS was looking for a way to survey underground pipes, we retrofitted the design for single-shell tank lateral gamma detection,” said Anthony Abrahao, FIU research scientist. “Students were highly involved in designing and building the crawler. They created pieces of the crawler with a 3D printer and collaborated with students at a university near Hanford to develop a system to deploy the crawler.”

A group of five interns at Washington State University’s (WSU) Tri-Cities campus in Richland designed a cable management system to retrieve the crawler once it completes scanning inside the pipes. The FIU team gave the WSU team

## “HANFORD COLLABORATES” – CONTINUED



*A mini crawler, developed by Florida International University students and faculty, moves along the outside of the inner tank shell on a double-shell waste-storage tank at the Hanford Site.*

design specifications to allow the two systems to work together, and the

WSU team came up with a reel that could automatically deploy the crawler at regular intervals without human involvement.

“This was such a unique learning opportunity,” said Misty Lace, a WSU mechanical engineering student. “All seniors have to work on a project, but we were one of the only groups that got to build something with a real-world application, coordinate our design with students on the other side of the country and then come together to test it.”

FIU DOE Fellow Jeff Natividad had roles in creating and testing both robots during back-to-back internships with WRPS at Hanford.

“I love robotics, but I hadn’t considered that it could apply to an environmental remediation task like this,” Natividad said. “I would like to see more students get involved in this kind of project so they can better understand the nuclear industry and the cool career opportunities that are available.” ■

# SOIL FLUSHING SYSTEM TO ACCELERATE HANFORD GROUNDWATER CLEANUP

OFFICE OF ENVIRONMENTAL MANAGEMENT  
Contributor: Dieter Bohrmann

RICHLAND, Wash. – EM Richland Operations Office (RL) contractor Central Plateau Cleanup Company (CPCCo) is preparing to employ an innovative treatment system at the Hanford Site to speed up the removal of contamination in the soil near the Columbia River. The system is installed on a half-acre area near the former K East Reactor. It is designed to remove hexavalent chromium, a hazardous chemical added to cooling water to inhibit corrosion in Hanford’s reactors. During Cold War operations, some of the chromium was spilled or leaked to the soil.

Groundwater treatment facilities have reduced the area of chromium contamination by more than 75% since 2010, but some contamination remains in the soil above the water table, making it difficult to remove.

The new system works by using up to 225 gallons of clean water per minute to force — or flush — chromium contamination in the soil down to the groundwater, where it will be extracted through a network of existing wells and sent to a nearby treatment facility, accelerating the cleanup process.



*EM contractor Central Plateau Cleanup Company is implementing a new soil flushing system near the Hanford Site’s former K East Reactor. The system forces residual chromium contamination in the soil down to groundwater, where it will be extracted through a network of existing wells and sent to a nearby treatment facility.*

“We are always seeking more thoughtful and cost-effective ways to improve the performance of our groundwater treatment network,” said Ellwood Glossbrenner, RL project lead for cleanup of soil and groundwater at Hanford. “The protection of the Columbia River is our ultimate goal, and this soil treatment system is a great example of how we are achieving our goal.”

The flushing system is expected to start this summer.

“I’m proud of our team for successfully implementing this enhancement to our groundwater remedy,” said Emily Macdonald, CPCCo project manager. “Removing this hard-to-reach contamination is a win for the environment and gets us one step closer to completing cleanup along the river.”

Collectively, Hanford’s treatment systems have removed about 600 tons of contaminants over the life of the groundwater cleanup mission. Most of the chromium contamination in the soil and groundwater along the Columbia River has been removed, as well as other contaminants of concern such as carbon tetrachloride, technetium-99 and uranium. ■



Members of the Hanford Waste Treatment and Immobilization Plant commissioning organization are pictured in front of the Effluent Management Facility. From left are Jeffrey Peterson, John Reyff, Scott Hennick, Jeffrey Blosil, Tyson Warner, Lance Pappas and Pat Mohondro.

# HANFORD ACHIEVES FIRST TEST TRANSFER BETWEEN TANK WASTE TREATMENT SUPPORT FACILITIES

RICHLAND, Wash. – Hanford Site crews recently completed the first transfer of test water from the Waste Treatment and Immobilization Plant’s (WTP) Effluent Management Facility (EMF) to the nearby Liquid Effluent Retention Facility (LERF).

The transfer of 6,000 gallons was the first simulation of the process that will be used to treat secondary liquid waste from the plant’s Low-Activity Waste (LAW) Facility during Direct-Feed Low-Activity Waste (DFLAW) Program operations to treat tank waste.

“This is a tremendous accomplishment that culminates years of work by our team and alumni toward being ready for hot commissioning,” said Valerie McCain, project director and senior vice president for EM Office of River Protection contractor Bechtel National, Inc. “It’s an important step for the entire Hanford team and our collective mission of protecting the Columbia River and its shoreline communities.”

To demonstrate the transfer, WTP crews inside the LAW Facility control room started a delivery sequence, and crews with tank operations contractor Washington River Protection Solutions (WRPS) began their acceptance protocols at the LERF. These steps released the test water from the EMF, allowing it to travel through underground transfer lines to the LERF.

“Testing like this gives us a chance to ensure our people and procedures are ready to operate safely and efficiently, and are integrated,” said Wes Bryan, WRPS president and project manager. “It demonstrates not only that the equipment works, but also how the teams work together to get one step closer to treating tank waste through DFLAW.”

During vitrification — the process of immobilizing tank waste in glass — secondary liquid, called effluent, will be generated by the LAW Facility, the Analytical Laboratory, and



During Hanford’s Direct-Feed Low-Activity Waste Program treatment operations, the Waste Treatment and Immobilization Plant, background, will feed liquid waste to the Liquid Effluent Retention Facility, foreground, through this primary transfer line.

when transfer pipes are flushed. The effluent is fed to the EMF, where excess water is boiled away. The water is then piped into holding vessels, where testing ensures it meets waste-acceptance criteria before transfer to the LERF. The remaining waste concentrate is returned to the LAW Facility for treatment.

During full operations, the LAW Facility is designed to vitrify up to 5,000 gallons of low-activity waste per day, equal to 1.75 million gallons per year. ■

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# HANFORD MAKES TANK WASTE RETRIEVAL PROGRESS AT A/AX COMPLEX

OFFICE OF ENVIRONMENTAL MANAGEMENT  
Contributor: Mark McKenna



Waste retrieval from Tank AX-101, the last of four tanks to be retrieved in the Hanford Site's AX Farm, is set to begin this fall. This in-tank photo shows the salt-based waste and the tank's 22 air-lift circulators.

RICHLAND, Wash. – Tank by tank, batch by batch, the EM Office of River Protection (ORP) and tank operations contractor Washington River Protection Solutions (WRPS) are reducing risk to the environment by retrieving waste from the Hanford Site's single-shell waste-storage tanks.

Less than five years after completing retrieval of waste in the last tank in the C Tank Farm, crews have completed field retrieval operations at three of the four tanks in AX Farm and are now installing retrieval equipment in the fourth, Tank AX-101. All the while, the team is implementing new tools and techniques to streamline the retrieval process and enhance safety.

“Moving waste from older single-shell tanks to newer double-shell tanks ensures continued safe storage until we send the waste to the Waste Treatment and Immobilization Plant for vitrification, or immobilization in glass,” said Delmar Noyes, ORP assistant manager for Tank Farms.

Tank AX-102 was the first tank to be retrieved in AX Farm. The tank is Hanford's 18th single-shell tank to be retrieved. While field operations in Tanks AX-103 and AX-104 are complete, the tanks are still in the technical review process that is required before they can be added to the list of retrieved tanks.

Most recently, workers installed the first of three extended-reach sluicers in Tank AX-101 that will be used for waste retrieval. The sluicers break up and mobilize solid waste in the tank.

The retrieval plan is to use sluicing and high-pressure water technologies to remove approximately 320,000 gallons of salt-based waste and transfer the waste in batches to a double-shell tank for continued safe storage. Retrieval operations are scheduled to begin at Tank AX-101 this fall.

“We're making tremendous progress in retrieving tank waste,” said Dave Carlile, who manages retrieval operations for WRPS. “We've got a talented team that demonstrates excellent teamwork and communication with a focus on doing the work safely. We use lessons learned from each retrieval project to develop plans for the next tank, and we improve our ability to anticipate and troubleshoot any issues we face along the way.”

While AX-Farm retrieval activities progress, workers continue to install the infrastructure to support future retrieval operations in A Farm, the next tank farm to be retrieved. Crews are hand-digging trenches and installing electrical systems.

Some of the most hazardous work is preparing tank pits for installation of retrieval equipment, such as pumps and sluicers, and associated equipment. The pits are located above tanks and provide access to the tank, pumps and monitoring equipment. Before they can clean out old pits, some of which have not been entered in 40 years, crews must remove old concrete covers. The crews perform video inspections and collect in-pit radiation level measurements to safely remove the large covers and allow workers to begin cleanout activities.

“In many cases, we don't have good notes on the tank's operational history, so we take a deliberate approach when entering tank pits to ensure worker safety,” said Gary Hopkins, construction



Crews safely remove legacy equipment from the Hanford Site's A Farm to prepare for future waste retrievals.

manager for the WRPS retrievals organization. “Oftentimes we run into situations where we need to develop and deploy special tools to remove old, contaminated equipment to allow for pit cleanouts.”

Once removed by crane, the covers are packaged and shipped to the Environmental Restoration Disposal Facility, Hanford's engineered landfill for disposal of low-level radioactive waste. Temporary steel plates are installed to cover the pits to support construction work. During retrieval, the steel covers and shield boxes are used to protect workers from radiation. ■