# Hanford Communities

Winter 2016
Newsletter

*Richland • Kennewick • Pasco • Franklin County • Benton County • Port of Benton*

Volume 22 www.ci.richland.wa.us/richland/hanford Edition 1


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### Inside



*Speakers' Bureau*

If you would like to have a member of the Hanford Communities Speakers' Bureau address your organization, please call (509) 942-7348.

*Workers drained pipes below the 100-F area as part of efforts to remove chromium-contaminated soil near the Columbia River.*

# Chromium Cleanup Along River Shows Significant Progress

Under the direction of the U.S. Department of Energy Richland Operations Office (DOE-RL), contractor Washington Closure Hanford (WCH) excavated more than 2 million tons of chromium-contaminated soil and moved it away from the Columbia River. The contaminated soil contained an estimated total of 129 tons of concentrated chromium from the B, C, D, F, and H Reactor areas. Chromium was originally added to cooling water for the reactors to prevent pipe corrosion and disposed of in burial grounds and waste trenches, eventually entering the soil and groundwater.

The effort, which began in 2012, removed and transported chromium-contaminated soil from a set of waste sites, treated the soil when necessary to meet disposal facility requirements, and disposed of the contaminated soil at the Environmental Restoration Disposal Facility in central Hanford. Workers then backfilled the sites with clean soil. Work is now ongoing to restore the sites with native vegetation.

The soil cleanup has resulted in the decrease of chromium contamination in groundwater from about 70,000 parts per billion (ppb) to about 300 ppb. The pump and treat facilities will continue to address groundwater contamination near the river.

"Removing the source of contamination is a critical step in protecting groundwater, and removing chromium while it is in the soil will significantly reduce the amount of time that our groundwater pump-and-treat facilities are operated," said Mark French, DOE-RL's project director for the river corridor, in a press release.

*continued on back page*

## Meetings

**February 3-4**
**Hanford Advisory Board Meeting**
8:30am to 5:30pm
Richland Red Lion

Contact Kristen Holmes
(509) 376-5803

**April 13-14**
**Hanford Advisory Board Meeting**
8:30am to 5:30pm
Richland Red Lion

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# ORP Finishes Banner Year

The DOE's Office of River Protection (ORP) had a productive year in 2015, with successes ranging from the resumption of production engineering at the Waste Treatment Plant (WTP) High-Level Waste (HLW) Facility to the reduction of 2 million gallons of liquid tank waste by the 242-A Evaporator.

*Workers used a clear plastic vessel for half-scale testing of the WTP pulse-jet mixer/ vessel mixing system.*

ORP implemented a path forward to begin tank waste treatment as early as 2022 through the Direct-Feed Low-Activity Waste (LAW) initiative. This approach requires a new facility, and ORP received approval to proceed with design for the LAW Pretreatment System. This facility will ensure that the waste is ready for vitrification. ORP also received approval to proceed with conceptual design of a tank waste characterization and staging facility, a critical component in the characterization and potential blending and conditioning of HLW.

At the WTP, workers completed placing the fire- and heat-resistant brick, the refractory, lining the two 300-ton melters installed in the LAW Facility. Contractor Bechtel National, Inc., also received the last of the bulk piping for the LAW Facility. To date, workers have installed about 96% of the piping necessary for the building, totaling more than 110,000 feet, or nearly 21 miles, of pipe installed.

Production engineering resumed, and construction continued at the HLW Facility, which reached the fifth of sixth elevations. At the Pretreatment Facility, technical issue resolution continued, with half-scale testing of pulse-jet mixer vessels completed and plans implemented to begin full-scale vessel testing. The full-scale test vessel will arrive at the site in 2016.


*Workers tagged equipment for turnover to startup for testing.*

Workers also transferred from construction to startup all major systems for three Balance of Facilities (BOF) at WTP; these systems are ready for operational testing. The systems are associated with the WTP Switchgear, BOF Switchgear, and Non-Radioactive Liquid Waste Disposal facilities.

Elsewhere at Hanford, workers completed waste removal from C-102, the fifteenth single-shell tank to be retrieved. Only two single-shell tanks now remain to be retrieved in the C Farm. At the 242-A Evaporator, workers reduced the volume of double-shell tank waste by about 2 million gallons through the evaporation of excess liquid.

In 2016, ORP will continue to focus on worker safety at the tank farms, preparing for additional tank waste retrievals and working on resolution of technical issues at the WTP Pretreatment Facility as well as the completion of other WTP support facilities. ■

# Portable Exhauster Removing Liquid from Leaking Single-Shell Tank

Washington River Protection Solutions (WRPS), the Hanford tank operations contractor for the DOE ORP, is using a portable exhauster to remove excess liquid from Tank T-111. This tank is considered to be leaking and contains about 436,000 gallons of sludge, with between 2,500 and 4,000 gallons of liquid waste on top. Most of the supernatant liquid was removed from this tank in 1974. Although no new liquid waste has been added to the tank since the 1990s, water has intruded over the years.

WRPS completed a 30-day test run of the exhauster in August, removing nearly 1,000 gallons of liquid. The exhauster removed another 1,000 gallons through September 28, working at a rate of about 25 to 30 gallons per day. In-tank images show changes in the waste surface, and liquid-level data confirm the decrease. The exhauster will also remove liquid in the top few inches of the sludge waste.

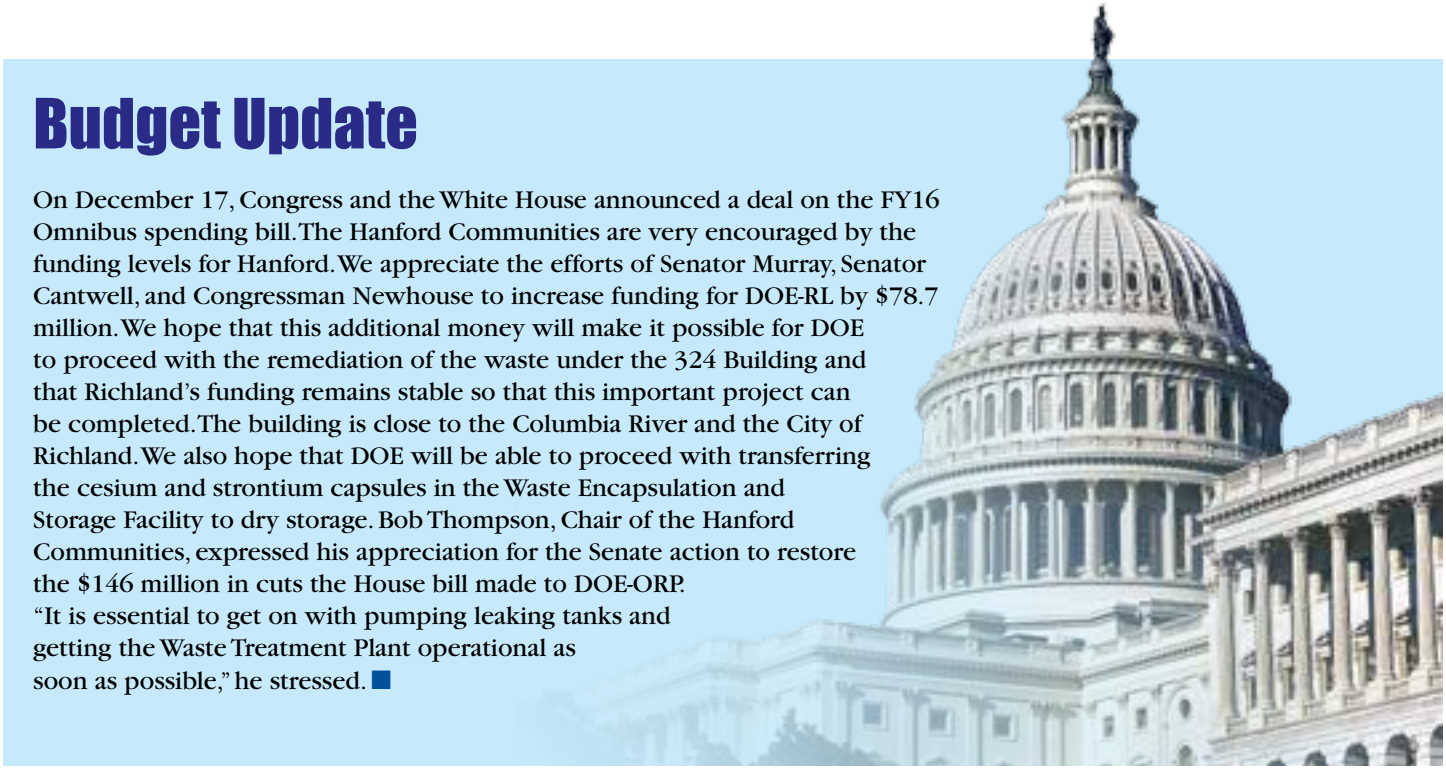
"The exhauster is performing as we hoped it would," said Mark Lindholm, WRPS president and project manager. "This is an important step in the right direction as we try to minimize liquid inside T-111."

Although exhausters have been used in the past to evaporate excess liquid from single-shell tanks, this is the first exhauster system WRPS has used to mitigate water intrusion. If the test is deemed successful, a similar approach could be used to remove liquid in more than two dozen other single-shell tanks known or suspected to have leaked in the past. ■

*Workers are using a portable exhauster to remove excess liquid from Tank T-111, which is considered to be leaking.*

# Budget Update

On December 17, Congress and the White House announced a deal on the FY16 Omnibus spending bill. The Hanford Communities are very encouraged by the funding levels for Hanford. We appreciate the efforts of Senator Murray, Senator Cantwell, and Congressman Newhouse to increase funding for DOE-RL by $78.7 million. We hope that this additional money will make it possible for DOE to proceed with the remediation of the waste under the 324 Building and that Richland's funding remains stable so that this important project can be completed. The building is close to the Columbia River and the City of Richland. We also hope that DOE will be able to proceed with transferring the cesium and strontium capsules in the Waste Encapsulation and Storage Facility to dry storage. Bob Thompson, Chair of the Hanford Communities, expressed his appreciation for the Senate action to restore the $146 million in cuts the House bill made to DOE-ORP. "It is essential to get on with pumping leaking tanks and getting the Waste Treatment Plant operational as soon as possible," he stressed. ■



# Bechtel Awards $111M to Regional Businesses in 2015

In FY15, Bechtel awarded more than $111 million in subcontracts to businesses based in Washington and Oregon and, of that, nearly $90 million to those in the Tri-Cities. These subcontracts represent 68.7% and 55%, respectively, of all those awarded by Bechtel for WTP construction and represent the largest percentage awarded in the past 5 years to Tri-Cities and regional businesses.

Tess Klatt, WTP Small Business Program manager, says Bechtel makes a good faith effort to support the local business community.

"The complexity of the WTP – in the construction of four nuclear facilities in one footprint – provides opportunities for both large and small businesses in industries from professional and technical services to fabricated metal manufacturing," she said.

Examples of local or regional businesses that received subcontracts from Bechtel for work at the WTP include Dade Moeller, Horizon Distribution, and Abadan. Since Bechtel began WTP construction, it has supported Washington and Oregon businesses with $1.72 billion. Of that, $1.2 billion has gone to businesses in the Tri-Cities. ■

# Chromium Cleanup Along River Shows Significant Progress, continued

Recently, workers near Hanford's D and DR Reactor areas completed remediation of the largest source of chromium contamination near the Columbia River. The work involved digging 85 feet to groundwater at three waste sites. Because of their size, the dig sites were engineered like open pit mines. One of the sites – D-100 – covered an area of more than seven-and-a-half football fields at ground surface and about one football field at the bottom.

"Removing the chromium contamination keeps it from being driven into the groundwater by rain and snow and is a major success for protecting the river and groundwater from future contamination," said Rob Cantwell, WCH director of closure operations. "We take a lot of pride in knowing we are protecting the environment, and the contamination is no longer a threat to the Columbia River." ■

Hanford Communities
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Spring/Summer 2016 Newsletter

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*Speakers' Bureau*

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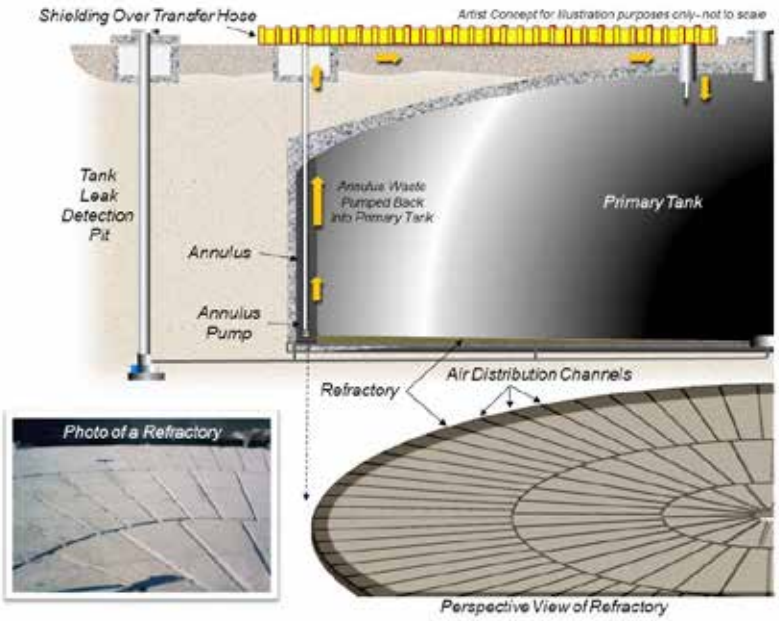
# Contractors Managing Tank AY-102 Leak as Waste Pumping Continues

On Sunday, April 17, an alarm alerted Washington River Protection Solutions (WRPS) crews pumping waste from double-shell Tank AY-102 to a potential problem. The rate of waste leaking from the inner tank to the annulus, the space in between the inner and outer tank, had increased. The U.S. Department of Energy (USDOE) notified the Washington Department of Ecology (Ecology) about the leak detection alarm.




*Waste from Tank AY-102 may be leaking from the inner tank into the refractory as crews work to pump out the tank.*

Tank AY-102 had previously been identified as leaking waste from the inner tank into the annulus. Knowing that waste removal could increase the leak rate as equipment moved waste around inside the tank, USDOE and WRPS had developed a contingency plan. Part of that plan involved installing pumping equipment in the annulus before starting waste removal on March 3.

Workers had removed about 95% of the waste in the inner tank, when the amount of waste in the annulus began increasing, indicating an increased leak rate from the inner tank. The level of waste reached about 8 inches in the 30-foot-high annulus. Then it began to decrease even before pumping equipment could be engaged. Neither the leak detection pit beneath the tank nor monitoring for chemical and radioactive emissions showed any sign of an environmental release.

Engineering evaluations of potential causes for the decline suggested the involvement of the tank's refractory--a pad-like structure on which the inner tank rests and which helps cool the inner tank. Waste in the annulus could be slowly entering the narrow air distribution channels within the refractory and/or is being absorbed into the somewhat porous refractory material. The issue is still being studied.

Workers began pumping the annulus within two days of the waste being detected in it. They resumed sludge retrieval shortly afterward. An engineer from Ecology's Nuclear Waste Program assessed the situation with the USDOE waste retrieval engineers to ensure that contingency response plans are being followed. As a precautionary measure, WRPS required workers to use supplied air in the AY Tank Farm and posted vapor control and vapor reduction zones in areas around the nearby AP Tank Farm. Vapor zones require workers to take certain precautions to prevent coming in contact with potentially hazardous fumes. ■

## Meetings

**June 8-9**
**Hanford Advisory Board Meeting**
8:30am to 5:30pm
Richland Red Lion

Contact Kristen Holmes
(509) 376-5803

**September 14-15**
**Hanford Advisory Board Meeting**
8:30am to 5:30pm
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*Inspectors open the door of F Reactor for the first time in years to check on conditions.*

# Inspectors Give Cocooned Reactors Clean Bill of Health

Five of Hanford's cocooned reactors are structurally sound, with remaining hazardous materials confined and little sign of animal or insect intrusion, according to a report released in March 2016. In late 2014 and early 2015, the USDOE contractor Mission Support Alliance (MSA) inspected the C, D, F, H, and N reactor buildings, which have been placed in safe storage enclosures, also known as cocoons. As part of the Long-Term Stewardship Program at Hanford, MSA conducts surveillance and maintenance inspections of the cocooned reactors every 5 years, as required by the Tri-Party Agreement.

"These inspections give us an opportunity to conduct structural and radiological surveys, identify needed repairs, and remove any hazardous substances," said Rick Moren, MSA Director of Long-Term Stewardship. "During the inspections, workers found the reactors to be in good shape and almost identical condition to when they were last inspected."

Inspections involved grinding away the weld that seals the reactor building door, then sending in an initial safety team consisting of industrial hygiene, industrial safety, and radiological control professionals and biologists to observe current conditions and establish any additional safety controls for the inspection teams. After the initial safety team completed its inspection, the radiological, structural, and instrumentation (temperature and flooding sensors) teams performed the required surveillances. Inspectors looked for deterioration caused by corrosion, aging of materials, water intrusion, wind damage, and animal and insect intrusion. Once an inspection for a reactor was completed, workers welded shut the door again. The plan is to monitor the reactors for up to 75 years to allow radioactivity to decay to more manageable levels before final disposition.

More information can be found on the Long-Term Stewardship website at http://www.hanford.gov/page.cfm/LongTermStewardship.

Watch a video of the process at https://www.youtube.com/watch?v=MlE-5L0PgL8. ■

# Manhattan Project National Historical Park Springs into Action

After much effort and support from local area communities and organizations, the Manhattan Project National Historical Park was established on November 10, 2015. The park, which includes sites in Los Alamos, Oak Ridge, and Hanford, has already opened tours for 2016.

In November 2015, the National Park Service met with scholars and experts from across the country and from the cities of Hiroshima and Nagasaki representing a wide range of expertise on the Manhattan Project story, including scientific, historical, political, social, environmental, and ethical perspectives. They identified a number of primary topics that could be developed further into full interpretive themes. These topics included science and technology, scale, secrecy/censorship, decision to use the bomb, war context, consequences of using the bomb, legacy, and peace, among others.

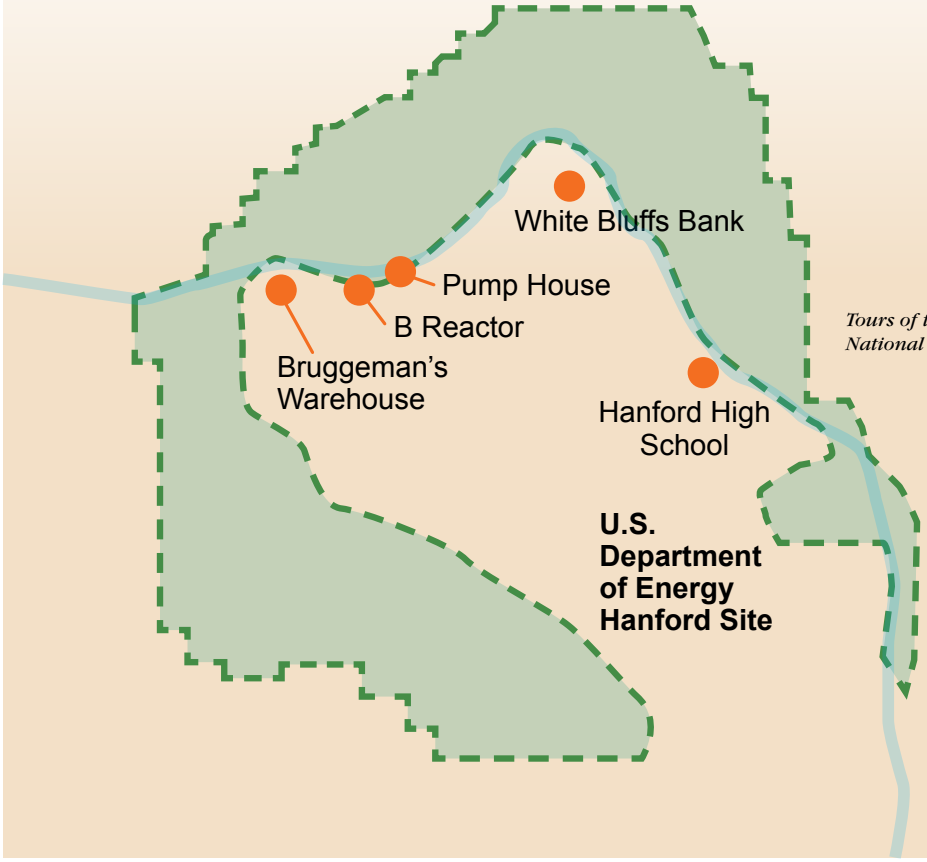
In February, the National Park Service named Tracy Atkins the interim superintendent for the park. Atkins previously served as the project manager overseeing the development of the Memorandum of Understanding between the USDOE and the Department of the Interior. The National Park Service also worked with USDOE to host Foundation Document Workshops at the three sites. Participants looked at the purpose, significance, fundamental resources and values, and themes for the park. They also assessed planning and data needs. Tour docents at Hanford have received interpretive training from National Park Service staff on the results of these workshops and meetings.

At Hanford, the park includes

- B Reactor National Historic Landmark, which is the world's first full-scale nuclear reactor and produced the material for the Trinity test and plutonium bomb used on Nagasaki
- Hanford High School in the Town of Hanford and Hanford Construction Camp Historic District
- Bruggemann's Agricultural Warehouse Complex
- White Bluffs Bank in the Town of White Bluffs Historic District
- Hanford Irrigation District Pump House.

In 2016, USDOE is operating two tour programs that provide access to the park sites at Hanford. One tour focuses on the B Reactor. The other explores the history of the mid-Columbia region before the Manhattan Project began construction at Hanford in 1943; it does not include B Reactor. Both are free and open to visitors of all ages and nationalities. Each tour lasts about 4 hours and includes transportation. Tours run Monday through Saturday from April 18 through November 19. A total of about 14,000 seats will be available.

You can learn more about the park at http://www.nps.gov/mapr. ■




*Tours of the Hanford portion of the Manhattan Project National Park include several important areas of the site.*

# Test Facility to Receive New Vessel to Better Support WTP

The Waste Treatment and Immobilization Plant (WTP) recently removed a 30-ton stainless steel vessel from the Full-Scale Vessel Test Facility, making way for a new vessel that will fulfill a critical role in verifying design and performance of the WTP Pretreatment Facility.

The old vessel, standing 18 feet tall with a 13-foot diameter, allowed WTP employees to demonstrate that pulse jet mixers planned for use in pretreatment would work as anticipated with a range of radioactive waste mixers. Workers put the mixers through a series of tests beginning in 2014. The first set of tests captured data on how the computer controls outside the vessel worked to operate mixers inside the vessel under a variety of tank levels using simulated waste with low amounts of solids. A second set of tests, completed in late 2015, studied how the mixers performed under a variety of slurry and tank level conditions, from low to high amounts of solids, using simulants.

"Our recently completed tests demonstrated we can consistently and reliably control these mixers," said Felice Presti, pretreatment area project manager for Bechtel National, Inc., the contractor building the WTP. "We're looking forward to conducting the full-scale testing."

*Cranes remove a 30-ton vessel from the WTP Full-Scale Vessel Test Facility to make way for the larger, final vessel.*

The new vessel will be a full-size prototype. At 35 feet high with a 16-foot diameter, it will function as a final prototype for the vessels to be installed in pretreatment. Its delivery is scheduled for this summer. WTP employees have begun developing a test plan for the full-scale vessel to support requirements verification. ■

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