PORTSMOUTH/PADUCAH PROJECT OFFICE

"The collective endeavor of PPPO's workforce to safely and successfully implement site-altering projects at Portsmouth and Paducah is having a dramatic impact on the cleanup mission."

– *Joel Bradburne, Manager, Portsmouth/Paducah Project Office*

HIGHLIGHTS

- Initiated demolition activities on the X-326 process building at Portsmouth and demolished 40 percent of the first of three massive structures – an EM 2021 priority.
- Portsmouth Infrastructure Support Services contract awarded – an EM 2021 priority.
- Opened the Portsmouth On-Site Waste Disposal Facility (OSWDF) and moved the first demolition debris generated from deactivation and decommissioning at the site into the facility.
- Completed excavation of the X-740 groundwater plume at Portsmouth to use its soil as engineered fill for the OSWDF.
- Completed the next steps of a multi-year project by removing an additional 1.5 million pounds of refrigerant currently stored at the Paducah site – an EM 2021 priority.
- Completed deactivation of the C-530 switchyard, the last of four switchyards at Paducah that supported electrical needs during legacy uranium enrichment operations.
- Completed the installation of a bulk hydrogen system at the Depleted Uranium Hexafluoride (DUF6) Conversion Project facilities in Paducah and Portsmouth, providing an alternate source of hydrogen needed for the conversion process.

PORTSMOUTH

Cleanup at the Portsmouth site entered a new era in 2021 with the onset of demolition of the X-326 process building, the operational start of the OSWDF and excavation of the previously closed X-740 groundwater plume to provide fill for the OSWDF. The successful alignment of these three projects paved the way for final cleanup of the site.

PROCESS BUILDING DEMOLITION

In May, following more than nine years of safe and systematic deactivation, workers began the structural demolition of the 2.6 million square-foot X-326 process building, one of the three large former uranium enrichment facilities at the site. By the end of December, 40 percent of the building's structure had been demolished, with the expectation that the remaining structural demolition will be completed in 2022.

Demolition of the X-326 process building began in May.

While demolition occurs at one process building, deactivation continues at the second of the three process buildings. Workers are fully engaged in activities to complete deactivation of the X-333 building, readying it for demolition to begin in 2023.

OSWDF PROVIDES A PATH FOR SAFE DISPOSAL OF DEMOLITION DEBRIS

The OSWDF began operations in 2021 as the landfill specifically engineered to safely accept debris from demolition at the Portsmouth Gaseous Diffusion Plant. The OSWDF received its first waste placement from the X-326 process building demolition in May. In total, the OSWDF expects to receive up to 5 million cubic yards of demolition debris and soils from the Portsmouth cleanup project.

At the OSWDF, placement operations continue as a landfill compactor compresses debris from the X-326 demolition project.

A northeast aerial view of the X-740 Groundwater Plume Excavation Project shows continuing progress on the site's west side.

Operations at the OSWDF will be enhanced by a regulatory agreement that allows previously closed landfills and plumes within the site's perimeter to be excavated and used as engineered fill at the OSWDF. The unique approach eliminates the need for off-site soils and will free up close to 1,000 acres of contiguous land to the community for beneficial reuse. In 2021, excavation of the X-740 groundwater plume was completed and provided approximately 37,000 cubic yards of soil as engineered fill for the OSWDF.

PADUCAH

At Paducah, projects continued to move the site toward demolition. Efforts to remove hazards, right-size utilities for cleanup operations, and investigate the primary source of trichloroethylene (TCE) at the site will continue to position it for an efficient and effective cleanup approach.

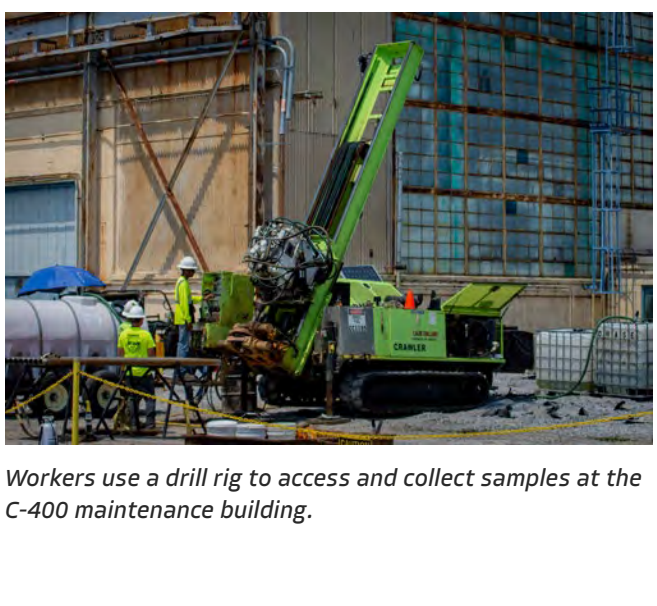
REFORMING INFRASTRUCTURE, TARGETING SOURCE ELIMINATION

In 2021, activation of a new Tennessee Valley Authority substation at the site continued efforts to align the site's infrastructure with future cleanup needs. Coupled with the deactivation of the C-531 switchyard, the new substation completes the elimination of four on-site switchyards left from legacy operations and downsizes the site from enough energy to power a city as large as Nashville, Tennessee, to a modernized, efficient, and independent electrical source.

The project team also continued the multi-year project removal of R-114 refrigerant from the Paducah site. Used to cool equipment in the uranium enrichment process during production years, the site was left with eight million pounds of the product in storage. In 2021, the site removed and shipped 1.5 million pounds for treatment and disposal.

Workers prepare R-114 for removal from the Paducah site.

In addition to deactivation efforts, workers completed base sampling at the C-400 maintenance building to support the C-400 Remedial Investigation/Feasibility Study. The study is the first document in a decision process that will develop a path for eliminating the primary source of TCE groundwater contamination that was discovered off DOE property in 1988.



Workers use a drill rig to access and collect samples at the C-400 maintenance building.

BULK HYDROGEN SYSTEM INCREASED DUF6 PLANT PROFICIENCY

Although DUF6 conversion operations were paused in 2021, the project moved forward with several major upgrades to the plants at Portsmouth and Paducah that will enhance their reliability and safety. This included the installation of the bulk hydrogen system at the plants. The bulk hydrogen systems will give the plants an alternate source of hydrogen, which is required for DUF6 conversion, thereby decreasing downtime during unplanned shutdowns.

Aerial view of the bulk hydrogen system at the Portsmouth DUF6 facility.