

*The Plutonium Uranium Extraction Plant was the fifth and final chemical processing facility built at Hanford.*



*The U.S. Department of Energy and contractor CH2M HILL Plateau Remediation Company finished stabilizing two waste storage tunnels on the Hanford Site in southeastern Washington State with engineered grout, significantly reducing the risk of collapse and possible release of radioactive materials.*

## Background

The Plutonium Uranium Extraction Plant (PUREX) operated from 1956 to 1972 and 1983 to 1988, to chemically reprocess fuel rods irradiated in Hanford’s reactors. In the 1950s and 1960s, two tunnels were constructed next to the plant to hold contaminated equipment that had been removed from PUREX.

On May 9, 2017, a 19-by-17-foot section of PUREX Tunnel 1 collapsed. Workers immediately placed more than 50 truckloads of soil into the collapsed portion of the tunnel. In the days following, workers placed a protective cover over the breach and longer-term stabilization planning began.

Following an analysis of stabilization options, the U.S. Department of Energy determined filling both the tunnels with engineered grout was the best option for providing the highest level of stability and protection, while not precluding future remedial actions.

## Mission

To ensure safety for workers and the environment, workers developed mock-ups for grout placement at an offsite facility. The mock-ups minimized the time workers spent above the tunnel, reducing their exposure risk and avoiding additional weight on the tunnel.

A number of safety controls also ensured employee and environmental safety during grout placement, including continuous monitoring and detection systems to alert workers to potential chemical or radiological exposure conditions, lights and cameras installed in the tunnel to allow crews to remotely monitor grout placement and progress, and onsite batching of the grout to ensure reliable delivery of grout while decreasing effects on traffic.

Tunnel 1 was successfully grouted in fall 2017 and Tunnel 2 was successfully grouted in May 2019.

## Future

With grouting complete, the PUREX tunnels returned to surveillance mode, during which crews will inspect the exteriors of the tunnels at least once a year.

*On May 9, 2017, workers noticed a partial collapse of PUREX Tunnel 1 and immediately began emergency stabilization efforts.*



*On Oct. 1, 2017, workers began placing engineered grout inside PUREX Tunnel 1 to stabilize the partially collapsed tunnel.*



*By May 2019, workers placed about 4,000 truckloads or nearly 40,000 cubic yards of grout into PUREX Tunnel 2.*

