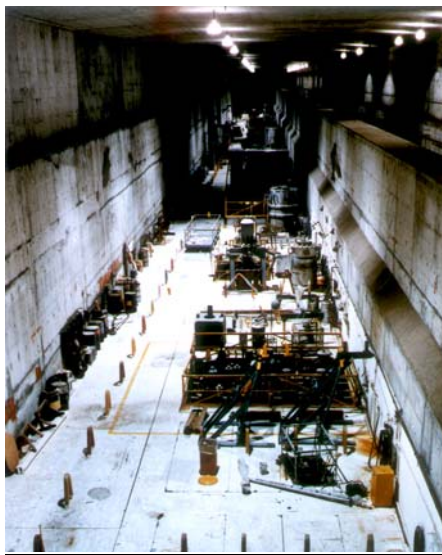


Richland ♦ Kennewick ♦ Pasco ♦ West Richland ♦ Benton County ♦ Port of Benton

Background

The Hanford Site is a U.S. Department of Energy (USDOE) owned, contractor-operated facility located in the southeast corner of Washington State near Richland. The 586-square-mile Hanford Site supports programs in waste management, environmental restoration, science, technology, and energy. Hanford was established during World War II to produce plutonium for America's defense program. Today many of the production facilities have been shut down and left standing. Five of these facilities are massive chemical processing plants, known as "canyons". They are located on what is called Hanford's Central Plateau in areas formerly used for chemical separation, plutonium and uranium recovery, processing of fission products, and waste management.



Interior of 221-U Facility (U Plant) which is one of five canyon buildings at Hanford.

U Plant Regional Closure

USDOE is pursuing a regional approach to cleanup of the Central Plateau, dividing the Plateau into more than 20 geographic areas. The U Plant Area, which is 1/3-square mile, will be the first of the geographic areas to be cleaned up. It consists of the U Plant canyon, 17 ancillary (support) buildings, underground pipelines, soil waste sites and underlying groundwater. The cleanup of each of the U Plant Area components is being addressed under separate decision documents. However, the intent of the regional cleanup concept is to achieve completion of cleanup work efficiently and cost-effectively.

Canyon Disposition Initiative

The original plan for remediation of the U Plant canyon came out of the Canyon Disposition Initiative. This Initiative explored the potential for using the intact canyon buildings as disposal sites for Hanford cleanup waste instead of demolishing them and sending the resulting waste and debris to a disposal facility elsewhere at Hanford. The Canyon Disposition Initiative resulted from a 1996 Agreement in Principle

among the Tri-Party agencies (USDOE, the U.S. Environmental Protection Agency and the Washington State Department of Ecology). The agreement was to evaluate disposition paths for the U Plant canyon using the Comprehensive Environmental Response, Compensation and Liability Act processes (CERCLA). U Plant was selected to be the pilot project because it has the lowest contamination levels of the five canyons and would provide the best opportunity to test equipment and procedures in a relatively benign environment. Hanford is leading the way for the nation in determining how to close these

large canyon facilities. The Canyon Disposition Initiative pilot is being watched by other USDOE sites in Idaho and Savannah River, SC. Lessons learned at U Plant will benefit the disposition of Hanford's four remaining canyon buildings as well as similar processing facilities at Idaho and South Carolina.

U Plant Canyon

U Plant was built in 1945 using the same design as the B and T canyons, to extract plutonium from irradiated fuel rods. Processing successes at B and T Plant, and the benefits of the improved REDOX process, eliminated the need to use U Plant for plutonium extraction. In 1952 U Plant was converted to recover uranium from B and T Plant processing waste. It was placed in standby in 1958 but later used for training, decontamination and reconditioning of equipment from other facilities. U Plant is a reinforced concrete structure about 800 feet long, 70 feet wide and 80 feet high. The floor and the walls consist of very thick, reinforced concrete. Under the CERCLA preferred alternative for U Plant, called "**Close in Place – Partially Demolished Structure,**" the plant's legacy contaminated equipment will be moved into the process cells. Remaining void spaces would be filled with grout, the building demolished to the canyon deck level, and the partially demolished structure covered with a surface barrier. The size of U Plant's engineered barrier may

vary because that barrier may also be utilized as a remedy for waste sites directly adjacent to the U Plant canyon. If viable waste streams from other Hanford cleanup projects are identified for disposal in the U Plant canyon and technologies become available to assure safe disposal, the U Plant Canyon Disposition Initiative Record of Decision may be amended to allow the use of the U Plant canyon for disposal of these waste streams, as originally envisioned in the Canyon Disposition Initiative.

Other U Plant Area Cleanup Actions

Regional closure of the U Plant Area also requires USDOE to take actions to address contaminated soil, ancillary structures, and pipelines. The U Plant Area encompasses waste sites from multiple CERCLA operable units that have been combined into the new 200-UW-1 Operable Unit. An "operable unit" is a grouping of waste sites according to geographic area or similar processes.

The *Feasibility Study and Proposed Plan for the 200-UW-1 Waste Sites* are in progress and propose installing three surface barriers on five high-risk sites implementing removal, treatment, and disposal of 15 waste sites; maintaining and monitoring existing soil cover and institutional controls for nine sites. Two waste sites are identified as not requiring any remedial action. One waste site, the 216-U-12 "crib" or waste trench, is permitted under the Resource Conservation and Recovery Act (RCRA). CERCLA and RCRA processes are being coordinated at that site. Two other CERCLA evaluations are associated with the U Plant Area:

- *Engineering Evaluation/Cost Analysis and Action Memorandum* for decontamination and decommissioning of U Plant ancillary facilities; and
- *Engineering Evaluation/Cost Analysis and Action Memorandum* for pipelines and miscellaneous waste sites.

Additional work is being done in the U Plant Area to address water sources that have the potential to drive existing soil contamination deeper into the soil column and into the underlying groundwater. This includes decommissioning old wells and deactivating and/or refurbishing water lines that run across the U Plant Area.

U Plant Regional Closure Objectives

- Demonstrate the area closure concept of grouping work for optimum use of resources, increased efficiency and cost-effectiveness;
- Eliminate potential sources of groundwater contamination;
- Accelerate decontamination/decommissioning of U Plant ancillary facilities; and
- Place U Plant in a condition for long-term stewardship.

The technical, regulatory and project management lessons learned will be critical to the future success

of closing the Central Plateau in a safe, compliant and cost-effective manner.

U Plant Regional Closure Challenges

- Identify closure and post closure requirements for the waste in 216-U-12 crib waste site, and for pipelines and diversion boxes;
- Remediate soil contamination;
- Complete engineering and surface barrier design for U Plant and 200-UW-1 waste sites;
- Characterize pipelines in preparation for remediation and closure; and
- Provide integration to support closure of USDOE Office of River Protection facilities.

CERCLA Decision Criteria

Each alternative evaluated in the various U Plant Area CERCLA documents is analyzed against the following nine CERCLA decision criteria:

Threshold criteria: (1) Overall protection of human health and environment; (2) compliance with Applicable or Relevant and Appropriate Requirements (ARARs).

Balancing criteria: (3) Long-term effectiveness and permanence ;(4) reduction of toxicity; mobility or volume through treatment; (5) short-term effectiveness; (6) implementability; and (7) cost.

Modifying criteria: (8) State and (9) community acceptance will be sought through open discussions on each respective remedy. Involvement of the tribal nations, stakeholders, and the public will be sought during comment periods.

Schedule: U Plant and Ancillary Facilities

November 2004: An *Action Memorandum for the Non Time Critical Removal of U Plant Ancillary Facilities* was issued to authorize decontamination and decommissioning of U Plant ancillary facilities.

July 2005: A *Record of Decision* will be issued for the *221-U Facility Canyon Disposition Initiative*. Demolition of 11 of the 17 ancillary structures will be completed.

Schedule: Waste Sites and Pipelines

May 16-June 30, 2005: 45-day public review period for the *Waste Site Proposed Plan*. *Record of Decision* is expected in September 2005:

September 2006: Deployment of the first surface barriers on the Central Plateau using innovative barriers called evapotranspiration or "store and release" barriers over two high risk waste sites. These barriers prevent water seepage into the underlying waste by storing the moisture and gradually releasing it back into the atmosphere. Furthermore, the *Pipeline Engineering Evaluation/Cost Analysis and Action Memorandum* will be completed in this time frame.

To find out how you can become more involved in this important regional issue, or to have a Hanford Communities speaker talk to your organization, contact the Hanford Communities at (509) 942-7348 or by fax at (509) 942-7379