

# External Technical Review Summary

United States Department of Energy Office of Environmental Management (DOE-EM)

## External Technical Review Remedial System Performance Improvement for the 200-ZP-1/PW-1 Operable Units at Hanford

### Why DOE-EM Did This Review



The 200-ZP-1 OU and PW-1 OU are pump and treat operating units (OU) designed to remove carbon tetrachloride (CT) from the groundwater and vadose zone, respectively. The units support a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remediation of the 200 West Area of the Hanford Site's Central Plateau. The primary contaminant of concern (COC) is CT and to a lesser extent technetium-99 (Tc-99). The groundwater extraction system consists of ten wells with capacity of 7 to 60 gallons per minute. The Soil Vapor Extraction (SVE) is conducted using one mobile extraction and treatment system, rotated among three sites for a combined period of six months per year. *This external review was a Remediation System Evaluation (RSE) of the 200-ZP-1/PW-1 groundwater and vadose zone extraction systems with the objective of identifying improvements as input to a Feasibility Study supporting the Final Record of Decision.*

### What the ETR Team Recommended

- The Feasibility Study should include and evaluate the two identified conceptual models for Dense Non-Aqueous Phase Liquid (DNAPL) below the water table as a continuous source of contamination and should focus on expanded pump and treat as the primary remedial technology for groundwater.

- The remedial strategy should emphasize hydraulic containment for the most impacted portion of the groundwater plume, with compliance standards achieved at locations beyond the capture zone. These points of compliance (POC) should be identified and negotiated as soon as possible.
- The Feasibility Team should determine as soon as possible if treatment of co-contaminants (Tc-99, nitrate, etc.) will be required.
- Rapid action is recommended to inhibit further migration of Tc-99 to the water table in the TX Tanks Area versus the proposed prompt evaporation study for CT release at the Z-9 trench.
- Commonly applied and publicly accessible modeling tools should be used whenever possible. Detailed modeling to better interpret performance monitoring data should continue.

### What the ETR Team Found

The ZP-1 treatment system is well run and maintained. The operators are knowledgeable and have a strong dedication to maintaining and improving the system. The Review Team believes that additional extraction wells open to deeper portions of the aquifer are needed for future contaminant extraction and plume capture. Treated water is injected back into the aquifer at three wells. The treatment removes volatile organics, but is not adequate for removing Tc-99, nitrate, or chromium. These co-contaminants warrant that the project team verify with the stakeholders that re-injection is still acceptable. The SVE is old, but has been well maintained. Budget allocations will be needed in the future for refurbishing.

To view the full ETR reports, please visit this web site:  
<http://www.em.doe.gov/Pages/ExternalTechReviews.aspx>

July 2009

*The purpose of an External Technical Review (ETR) is to reduce technical risk and uncertainty. ETRs provide pertinent information for DOE-EM to assess technical risk associated with projects and develop strategies for reducing the technical risk and to provide technical information needed to support critical project decisions. Technical risk reduction increases the probability of successful implementation of technical scope. In general, ETRs assesses technical bases, technology development, and technical risk identification and handling strategies.*



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