

POSTER TITLE: Conceptual Design of Engineered Hydraulic Barrier Walls

Review areas:

- Preliminary Design: hydraulic conductivity, depth, thickness, and materials
- Installation, stability and safety
- Performance monitoring and maintenance
- Corrective action program
- Groundwater flow
- Groundwater modeling

Some of the questions raised during NRC's review:

- How will the recontamination potential for the WMA-1 excavation area be minimized, and the safety of excavation workers be protected during excavation and prior to backfilling? The removal of contaminated soil and groundwater in the excavation will locally alter the water table configuration and reverse the natural hydraulic gradient. An adequate design and installation of engineered hydraulic barrier walls is required to provide the stability necessary to permit excavation close to the edge of the excavation, and to ensure protection of workers during remediation, in addition to preventing recontamination of the excavation area.
- How would the installation of engineered hydraulic barrier walls in Phase I decommissioning potentially impact other systems and Phase II remedial decisions, such as permeable reactive wall, HLW tank and vault drying system?
- What monitoring and maintenance programs will be put in place to ensure the hydraulic barriers achieve the stated objectives after the excavations are backfilled with clean soil? A robust groundwater monitoring program should include an adequate numbers of piezometers placed up- and down-gradient of the barrier walls, and groundwater monitoring wells in the vicinity of the HLW Tank Farm area, with a specific monitoring schedule and parameters. Conditions that lead to corrective actions of the engineered barriers need to be clearly defined.

NRC staff actions:

- NRC staff generated several requests for additional information related, for example, to (i) lack of design details and monitoring program for the engineered hydraulic barrier walls and (ii) need for detailed evaluation of the impact by the hydraulic barriers on other system operation and future remedial options.

Future NRC staff actions include:

- Review of responses to requests for additional information, and final barrier design.
- Conduct additional modeling or calculations, as necessary, to verify or supplement information gaps.