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Date: December 5, 2007
Refer To: EP2007-0756

James P. Bearzi, Bureau Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

Subject: Recommendations for Removal of Mortandad Canyon Permeable Reactive Barrier

Dear Mr. Bearzi:

This letter documents the Los Alamos National Laboratory's (the Laboratory's) recommended approach for removing the Mortandad Canyon permeable reactive barrier (PRB) as discussed with your staff on different occasions during the past three weeks. The PRB is being removed pursuant to the New Mexico Environment Department's (NMED's) requirement in the Approval with Direction of the Mortandad Canyon investigation repor, dated February 23, 2007. Although not explicitly stated in the approval letter, a key objective of the removal project for both NMED and the Laboratory is to glean an understanding of the nature of compromised hydrologic and geochemical performance and the cause of subsidence of the surface overlying the barrier materials. In summary, the water-quality data obtained from the fourth in a series of cells containing reactive media are similar to the "influent" groundwater entering the first cell. It is hypothesized that the cause may be hydrologic bypass. The source of the subsidence is not known. The lessons learned from this project will be used in the application of PRB projects that the Laboratory may implement as part of future corrective measures such as those associated with the 260 site at Technical Area 16.

Following discussions with your staff, the Laboratory proposes that the objectives stated above can be met by removing only the reactive media and the separating septa within the primary structure. The approach will allow complete examination of the condition of the barrier structure to assess the integrity of its construction, especially as it pertains to potential hydrologic bypass of reactive media. As the various layers of material within the PRB are removed, detailed examination will also provide opportunities to assess the cause of the subsidence (e.g., compaction of reactive media vs. overlying fill material). Materials used to backfill the frame will be of sufficient hydraulic conductivity to ensure unrestricted flow of alluvial groundwater through this portion of the canyon.

This approach also significantly reduces (1) the safety issues if the frame is completely removed, (2) the footprint of the excavation and, therefore, disturbance of in-place alluvium, and (3) significant amounts of additional waste that may be generated.

If you have any questions, please contact Danny Katzman at (505) 667-6333 (katzman@lanl.gov) or Mat Johansen at (505) 665-5046 (mjohansen@doeal.gov).

Sincerely,

Susan G. Stiger, Associate Director
Environmental Programs
Los Alamos National Laboratory

Sincerely,

David R. Gregory, Project Director
Environmental Operations
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