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January 15, 2003

Elizabeth Withers
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(TA-60)

Dear Ms. Withers:

RE: A FLOODPLAINS AND WETLANDS ASSESSMENT FOR THE POTENTIAL EFFECTS OF THE INSTALLATION OF A MULTIPLE PERMEABLE REACTIVE BARRIER WITHIN MORTANS CANYON; PREPARED BY DAVID C. KELLER, ECOLOGY GROUP, LOS ALAMOS NATIONAL LABORATORY, NOVEMBER 25, 2002

This transmits New Mexico Environment Department (NMED) staff comments concerning the above-referenced assessment document.

Hazardous Waste

Section 1.0: Proposed Action: A detailed ground water monitoring plan should be prepared before the permeable reactive barrier is installed. Extensive and comprehensive monitoring is advised, particularly because Los Alamos National Laboratory (LANL) envisions this project as a model for future projects at the Laboratory and other Department of Energy sites. The number and locations of monitoring wells to be installed should be sufficient to determine upgradient water quality; performance of the barrier; treatment effectiveness; groundwater flow rate; leakage, underflow, or overflow across the barrier; flow around the barrier; and downgradient water quality. LANL should consult the available guidance documents regarding installation and monitoring of Multiple Permeable Reactive Barriers (PRBs), including the Interstate Technology and Regulatory Cooperation's (ITRC) "Regulatory Guidance for Permeable Reactive Barriers Designed to Remediate Inorganic and Radionuclide Contamination" and the Environmental Protection Agency's (EPA) "Permeable Reactive Barrier Technologies for Contaminant Remediation." EPA guidance recommends low-flow sampling techniques for sampling monitoring wells associated with PRBs. LANL should follow the low-flow sampling methods outlined in the NMED's position paper on low-flow sampling.

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The assessment notes that the entire Mortandad Canyon project area is considered to be potentially contaminated. In fact, LANL's Environmental Surveillance Report for 2001 (LA-13979-ENV) provides evidence of radioactive contamination in sediments and ground water in Mortandad Canyon, as well as high levels of perchlorate in alluvial ground water. Metals such as cadmium and mercury are also likely to be present. Consequently, the monitoring plan should include sampling and testing of soil that is removed during excavation of the trenches for the barrier walls and during other construction-related activities, as well as testing of ground water that may be generated during dewatering of the excavations and during sampling operations.

All contaminated soil and ground water generated should be characterized, contained and disposed of properly. The potential presence of Resource Conservation and Recovery Act (RCRA) hazardous wastes, hazardous constituents, solid wastes and commingled radionuclides is likely and all wastes must be sampled and characterized appropriately prior to disposal of excavated material. An example of the possible RCRA issues that may arise during the installation, maintenance and remediation of environmental media is a "contained in" determination request by LANL to NMED for the disposal of accumulated sediments in the sediment traps located downgradient of the PRB. Material removed from the sediment traps contained F-listed RCRA waste and may not be disposed at TA-54 without prior approval from NMED.

The monitoring plan should assess the performance of the PRB and contain contingency plans if the anticipated performance is not achieved. Although the proposed project is short-term (five years), the absorptive capacity of the barrier should be considered. When the capacity is reached, there will be increased potential for contaminants leaching out of the barrier into the downgradient groundwater. Steps should be taken to ensure that contaminated water does not flow over, under, or around the barrier. The base of the barrier walls should be set in the underlying tuff, preferably into a layer of welded tuff, to minimize the potential for contaminant underflow. Fractures in the surrounding rock may allow diversion of contaminants around the PRB, thus compromising the effectiveness of the barrier.

Section 2.1.2 Geologic Setting: The assessment states that runoff in canyon streams percolates through the alluvium until its downward movement is impeded by layers of weathered tuff and volcanic sediment. This statement is incomplete and misleading. In fact, the subsequent paragraph in the assessment contradicts this statement by noting that intermediate-depth groundwater is formed in part by recharge from the overlying alluvial groundwater and shows evidence of radioactive and inorganic contamination from LANL operations. The assessment accurately claims that the regional aquifer is separated from alluvial and perched waters by about 350 to 650 feet of tuff and volcanic sediments; however, it fails to mention that the intermediate perched ground water is believed to be both a source of recharge to the regional aquifer and a significant contaminant transport path. Fractures, faults and high permeability hydrostratigraphic units in the bedrock have been shown to provide pathways for downward water movement. There is also evidence of unsaturated flow to the regional aquifer from perched ground water.

Section 3.2: End-State Conditions: A plan that describes the necessary actions to return the Mortandad Canyon project area to pre-PRB conditions (the desired end-state condition) should be prepared during the design phase of the project, before work begins. Methods and goals for erosion control, revegetation, soil contouring, and streambank rehabilitation should be included in the plan. Proper disposal of the contaminated reactive media should also be considered.

Section 5.2.3: Summary of Impacts: Due to the presence of contaminated sediment in the Mortandad Canyon project area, potential increases in erosion, stormwater runoff and sediment movement are of concern. A plan that incorporates all Best Management Practices (BMPs) for erosion control and sediment migration, including options and contingencies for such practices, should be prepared before work begins and should be followed throughout the life of the project.

Ground Water

In this pilot project, LANL proposes to install layers of lava rock, gravel, mineral apatite, cotton seed meal, pecan shells, and limestone in order to reduce concentrations of nitrate, perchlorate, and radionuclides in ground water.

The Department's Ground Water Quality Bureau (GWQB) supports the concept of this pilot project as it may abate ground-water pollution. Pursuant to New Mexico Water Quality Control Commission (WQCC) regulation 20.6.2.4105.A.3, NMAC, the proposed action is exempt from the WQCC Abatement Plan requirements because abatement of ground-water pollution at LANL should be accomplished in accordance with the November 26, 2002 Order issued to LANL by NMED under the New Mexico Hazardous Waste Act. If, however, such abatement does not ultimately result in compliance with WQCC standards, the exemption would no longer be applicable, and LANL may be required to submit an Abatement Plan proposal to achieve compliance.

Since the project will involve the introduction of foreign materials into ground water, LANL must file a Notice of Intent to Discharge with NMED pursuant to WQCC regulations 20.6.2.3104 and 20.6.2.3106, NMAC.

We appreciate the opportunity to comment on this document.

Sincerely,

Gedi Cibas, Ph.D.

Environmental Impact Review Coordinator

NMED File No. 1676ER