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Date: APR 15 2011
Refer To: EP2011-0139

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

Subject: Proposal for Alternative Evaluation of Cross-Flow between Screens at Well R-57

Dear Mr. Bearzi:

Los Alamos National Laboratory (the Laboratory) and the U.S. Department of Energy (DOE) propose an alternate method for addressing the volume of cross-flow that occurred between the upper and lower screens at R-57 when the screens were in communication during development, testing, and sampling-system installation. Pursuant to the discussion between the Laboratory/DOE and your staff on January 06, 2011, the Laboratory has performed a capture-zone analysis to address the estimated 31,400 gal. of cross-flow, as documented in the attachment to this letter.

In R-57, the static water level of the upper screen zone lies above that of the lower zone, causing downward flow of groundwater from the upper screen into the lower screen during periods when the two screens are not separated with a packer. Commingled water in the aquifer around the lower screen eventually migrates downgradient through ambient groundwater flow or is removed from the aquifer by active pumping. In the past, the Laboratory has typically estimated the volume of cross-flow and has removed 125% of the estimated volume by active pumping. The cross-flow water is stored, sampled, and disposed of, usually by land application.

The Laboratory has calculated that the cross-flow volume of approximately 31,400 gal. at R-57 has likely been dispersed downgradient and is no longer in the aquifer in the area immediately surrounding the lower screen. The report presented in the attachment uses a capture-zone analysis method recommended by the U.S. Environmental Protection Agency (EPA/540/S-97/504) and indicates that the commingled groundwater at R-57 has already migrated beyond the capture zone of the sampling system pump. The analysis estimates that a conservative travel time for the cross-flow out of the sample pump capture zone is approximately 6 days. To date, a total of 115 days have passed since the dedicated sampling system and packer that isolates the two screened intervals were installed. Based on this analysis, the Laboratory requests approval to forego removing the 31,400 gal. of cross-flow at R-57 and to proceed with purging a minimum of three casing volumes plus the amount needed to obtain stable field parameters. The sampling will be conducted in accordance with the Laboratory's standard operating procedure for groundwater sampling during the upcoming sampling campaign in the Pajarito watershed, scheduled to begin on April 18, 2011.

If you have any questions, please contact Mark Everett (meverett@lanl.gov) at (505) 667-5931 or Hai Shen at (505) 665-5046 (hshen@doeal.gov).

Sincerely,

B. G. Schappell for MJG

Michael J. Graham, Associate Director
Environmental Programs
Los Alamos National Laboratory

Sincerely,

Edwin P. Watts for

George J. Rael, Manager
Environmental Projects Office
Los Alamos Site Office

MG/GR/CD/TB:sm

Attachment: Cross-Flow Analysis of Screen Zones at R-57 (LA-UR-11-2176)

Cy: Laurie King, EPA Region 6, Dallas, TX
Steve Yanicak, NMED-DOE-OB, MS M894
Tom Skibitski, NMED-OB, Santa Fe, NM (date-stamped letter emailed)
Hai Shen, DOE-LASO, MS A316 (date-stamped letter emailed)
Annette Russell, DOE-LASO (date-stamped letter emailed)
Ted Ball, EP-CAP, MS M996 (date-stamped letter emailed)
Craig Douglass, EP-CAP, MS M996 (date-stamped letter emailed)
Michael J. Graham, ADEP, MS M991 (date-stamped letter emailed)
William Alexander, EP-BPS, MS M992 (date-stamped letter emailed)
RPF, MS M707