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**CERTIFIED MAIL – RETURN RECEIPT REQUESTED**

July 18, 2007

David Gregory  
Federal Project Director  
Los Alamos Site Office, Department of Energy  
528 35<sup>th</sup> Street, Mail Stop A316  
Los Alamos, NM 87544

David McInroy  
Remediation Services Deputy Project Director  
Los Alamos National Laboratory  
P.O. Box 1663, Mail Stop M992  
Los Alamos, NM 87545

**RE: APPROVAL WITH DIRECTION FOR THE “INVESTIGATION REPORT FOR MATERIAL DISPOSAL AREA L, SOLID WASTE MANAGEMENT UNIT 54-006, AT TECHNICAL AREA 54” AND “ADDENDUM TO THE INVESTIGATION REPORT FOR MATERIALS DISPOSAL AREA L, SOLID WASTE MANAGEMENT UNIT 54-006, AT TEHCNICAL AREA 54”  
LOS ALAMOS NATIONAL LABORATORY  
EPA ID #NM0890010515  
HWB-LANL-07-012**

Dear Messrs. Gregory and McInroy:

The New Mexico Environment Department (NMED) is in receipt of the United States Department of Energy (DOE) and the Los Alamos National Security, LLC's (collectively, the Permittees) document entitled *Addendum to the Investigation Report for Material Disposal Area L, Solid Waste Management Unit 54-006, at Technical Area 54* (hereafter, the Addendum) dated May 2007 and referenced by LA-UR-07-3214/EP2007-0264. NMED has reviewed the Addendum and the previously submitted *Investigation Report for Material Disposal Area L, Solid Waste Management Unit 54-006, at Technical Area 54, Revision 1* (hereafter, the Report) dated March 2006 and referenced by LA-UR-06-1564/ER2006-0193, and hereby issues this Notice of Approval with Direction.



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With this Notice, NMED directs the Permittees to submit a Corrective Measures Evaluation (CME) Report for MDA L. NMED provides the following direction for the Permittees to develop the CME Report and to continue to monitor volatile organic compounds (VOCs) and tritium in subsurface pore gas at MDA L.

### **1. Uncertainty of the Fate of VOCs and Tritium in Subsurface Pore Gas**

The monitoring data presented in the Addendum demonstrates that vapor-phase contamination consisting of VOCs and tritium has reached the Cerros del Rio basalt (the basalt). The top of the basalt is approximately 385 feet below ground surface (bgs). Monitoring data collected within the basalt confirm that VOCs and tritium have moved across the interface from the Bandelier Tuff (the Cerro Toledo interval or the Otowi Member) into the basalt. The decreased concentrations of vapor-phase VOCs and tritium that were observed within the basalt do not necessarily indicate the ultimate termination point in the subsurface.

There is considerable uncertainty in any evaluation of the fate of vapor phase VOCs and tritium due to the fracture characteristics of the basalt. According to the MDA L modeling predictions (*Los Alamos National Laboratory's Hydrogeologic Studies of the Pajarito Plateau: A Synthesis of Hydrogeologic Workplan Activities 1998-2004*, LA-14263-MS, December 2005), it would take only one to five years for contaminants to migrate through the fractured basalt, even though the basalt comprises over 50 percent of the unsaturated zone at MDA L. It is therefore unlikely that the basalt would act as an effective barrier to prevent downward migration of contaminants toward the regional aquifer. In fact, the basalt may provide a preferential pathway for fast transport of contaminants. Data obtained from BH-D2 (54-24399) in the Report and the Addendum confirms that certain VOCs and tritium have migrated to depths as deep as 608 feet below ground surface. The regional groundwater table is projected to be located within the basalt approximately at 900 feet below ground surface at MDA L (*Characterization Well R-22 Completion Report*, LA-13893-MS, February 2002). Consequently, the vapor-phase plumes of VOCs and tritium in the subsurface pore gas are potential contamination sources to regional groundwater. The high concentrations over the basalt increase the likelihood of contaminant migration by fracture flow.

The uncertainty associated with the fate and transport of VOCs and tritium in the fractured basalt require that the remedy selection at MDA L be conservative to protect the regional groundwater from contamination. Therefore, the Permittees must address in the CME Report not only the potential release and migration of contaminants from disposal shafts and pits at MDA L, but also the subsurface vapor-phase plumes of VOCs and tritium at the top of the basalt. The CME Report must include an evaluation of appropriate remedies ranging from no further action to complete removal of MDA L contaminant sources.

## **2. Continuous Monitoring of VOCs and Tritium in Subsurface Pore Gas**

a) To provide reliable monitoring data for selecting and designing a remedy, the Permittees must continue the current quarterly monitoring program for vapor-phase tritium and VOCs. Tritium must be added to the vapor-monitoring program because the detected increase in tritium concentrations with depth (*e.g.*, boreholes BH-D1 and BH-A) suggests the likelihood of preferential pathways for downward transport of contaminants beneath the site that may result in more rapid contaminant transport toward the regional water table.

b) The *Summary Report: 2006 In Situ Soil Vapor Extraction Pilot Study at Material Disposal Area L, Technical Area 54*, dated November 2006 and referenced by EP2006-0981, was submitted to NMED for review on June 19, 2007. Any direction provided to the Permittees for additional information or field work will be based in large part on NMED's review of the Pilot Study.

c) The Permittees must continue to monitor subsurface pore gas on a quarterly basis while preparing the CME. Boreholes BH-H, BH-I, BH-J (drilled in April 2007) and the two 2006 SVE pilot study boreholes (SVE East and SVE West) must be included as new sampling locations in addition to those that have already been included in the periodic monitoring vapor sampling activities. An interim monitoring plan describing the vapor monitoring activities from now until a final remedy is selected must be submitted to NMED within 60 days of the date of this letter. This interim plan should include, but not be limited to, the following sections: 1) scope of activities (sampling locations, sampling intervals, and analytical suite); 2) sample collection methods; 3) field-screening methods; and 4) analytical methods.

d) NMED believes that submittal of a comprehensive long-term subsurface monitoring plan (Appendix I of the Report) is premature at this time. NMED therefore declines to approve this portion of the Report.

As a reminder, the Permittees must summarize the results of all ongoing vapor and groundwater monitoring conducted in and surrounding MDA L, as well as incorporate the above comments (where appropriate), in the CME Report. The CME Report must be submitted to NMED for approval no later than January 18, 2008 (the new notice date will be June 30, 2009).

Messrs. Gregory and McInroy

July 18, 2007

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Should you have any questions or comments, please contact David Cobrain at (505) 476-6055 or Kathryn Roberts at (505) 476-6041.

Sincerely,



James P. Bearzi

Chief

Hazardous Waste Bureau

cc:

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file: Reading and LANL '07 TA-54 (MDA L, SWMU 54-006)