



BILL RICHARDSON  
Governor

DIANE DENISH  
Lieutenant Governor

NEW MEXICO  
ENVIRONMENT DEPARTMENT

*Hazardous Waste Bureau*

2905 Rodeo Park Drive East, Building 1  
Santa Fe, New Mexico 87505-6303  
Phone (505) 476-6000 Fax (505) 476-6030  
[www.nmenv.state.nm.us](http://www.nmenv.state.nm.us)

 ENTERED



RON CURRY  
Secretary

SARAH COTTRELL  
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

April 22, 2010

Michael J. Graham  
Associate Director Environmental Programs  
Los Alamos National Security, L.C.C.  
P.O. Box 1663, MS M991  
Los Alamos, NM 87545

George J. Rael  
Environmental Operations Manager  
Los Alamos Site Office  
Department of Energy  
3747 West Jemez Rd, MS A316  
Los Alamos, NM 87544

**RE: APPROVAL WITH MODIFICATIONS  
PERIODIC MONITORING REPORT FOR VAPOR-SAMPLING  
ACTIVITIES AT MATERIAL DISPOSAL AREA T,  
CONSOLIDATED UNIT 21-016(a)-99, AT TECHNICAL AREA 21,  
SEPTEMBER TO NOVEMBER 2009  
LOS ALAMOS NATIONAL LABORATORY  
EPA ID #NM0890010515  
HWB-LANL-10-012**

Dear Messrs. Graham and Rael:

The New Mexico Environment Department (NMED) received the United States Department of Energy (DOE) and the Los Alamos National Security L.L.C.'s (LANS) (collectively, the Permittees) *Periodic Monitoring Report for Vapor-Sampling Activities at Material Disposal Area T, Consolidated Unit 21-016(a)-99, at Technical Area 21, September to November 2009* (Report), dated January 2010 and referenced by LA-UR-10-0409/EP2010-0015. NMED has reviewed the Report and hereby issues this Approval with the following modifications.

Comments

1. In Table 4.0-1 (Summary of Pore-Gas Field-Screening Results, September – November 2009) the percent oxygen (O<sub>2</sub>) and percent carbon dioxide (CO<sub>2</sub>) readings



33462

vary considerably. At a minimum, the Permittees must ensure proper instrument calibration and always sample the percent O<sub>2</sub> and percent CO<sub>2</sub> until the results have stabilized and are representative of subsurface pore-gas conditions, then collect samples for volatile organic compounds (VOCs). No revision to the Report is necessary; however, the Permittees must discuss the wide range of percent O<sub>2</sub> readings in future Periodic Monitoring Reports.

2. In Section 5.1 (VOC Pore-Gas Results), Section 6.2.2.1 (VOCs), and Section 6.0 (Summary) the Permittees state that the data distribution for several contaminants create an S-shaped curve when plotted; however, the Permittees do not discuss the significance of the S-shaped curve. No revision to the Report is necessary; however, in future Periodic Monitoring Reports (PMR), the Permittees must elaborate on their interpretation of data curves, or remove the reference.
3. Table 1.0-1 (History of MDA T Periodic Monitoring Events) is confusing. The "Quarters" column begins with "Current Quarter" and then names the previous quarterly sampling events as "1<sup>st</sup> Previous Quarter" through "7<sup>th</sup> Previous Quarter" where the "1<sup>st</sup> Previous Quarter" represents the most recent sampling events (June-August 2009) and the "7<sup>th</sup> Previous Quarter" is the first sampling event (October 2007). In future PMRs, the Permittees must revise the table so that quarters are named appropriately so that the first sampling event (in the first quarter of sampling) is named 1<sup>st</sup> Quarter Sampling, then each successive event is called 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> until the most recent sampling event, which is in the 8<sup>th</sup> Quarter (September-November 2009). Alternatively, the Permittees may list the sampling events by date.
4. Table 4.0-2 (Barometric Pressure, Relative Humidity, and Temperature at Los Alamos Airport during Sample Collection, September – November 2009) lists the sampling round (10-12), date/time of measurement, barometric pressure, relative humidity, and temperature. The reasons the Permittees started to collect these data are not provided. In future Periodic Monitoring Reports, the Permittees must explain the significance of these data relative to the vapor-monitoring at MDA T.
5. Table 5.4-2 (Unsaturated Hydraulic Conductivity Properties for Boreholes 21-25262 and 21-607955) contains symbols that are not defined ( $\alpha$ , N,  $\theta_r$ ,  $\theta_s$ ). The Permittees must define all acronyms and symbols used in future PMRs.

### Specific Comments

#### **1. Section 1.0, Introduction, page 1 – 2:**

**Permittees' Statement:** "To date, intermediate vapor-monitoring wells 21-25264, 21-603058, and 21-603059 have been sampled for 12 rounds, from October 2007 to November 2009 (rounds 1–12); vapor-monitoring well 21-25262 has been sampled for 6 rounds, from June to November 2009 (rounds 7–12); and the newest vapor-monitoring well 21-607955 has been sampled for 1 round in December 2009 (for discussion purposes in this report, these samples are considered to be part of sampling

round 12, November 2009). All pore-gas samples were submitted for off-site analysis of VOCs and tritium. "

**NMED Comment:** The Permittees' use of "round" to describe the vapor sampling is confusing, because "round" is used to describe both quarterly sampling and monthly sampling. For example, in vapor-monitoring well 21-25264 (sampled 12 times), the first six events were sampled on a quarterly basis; starting with the seventh sampling event, the samples have been collected monthly. All of the sampling is described as rounds 1-12 with no distinction between them. Additionally, naming the first sampling event for vapor-monitoring well 21-607955 as the "12<sup>th</sup> round" makes it seem as though it has been sampled for 12 "rounds", when it has only been sampled once (this is also applicable to the first sampling event at vapor-monitoring well 21-25262 starting in "round" 7). The Permittees must differentiate between quarterly and monthly sampling events as well as between the 2007 sampling and that of the newly installed wells for future Periodic Monitoring Reports.

**2. Section 5.1, VOC Pore-Gas Results, page 7, paragraph 3:**

**Permittees' Statement:** "Acetone and toluene were detected at their maximum concentrations at TD (~950 ft bgs) during the initial round of pore-gas sampling in vapor-monitoring well 21-607955 (concentrations of 30,000 µg/m<sup>3</sup> and 690 µg/m<sup>3</sup>, respectively), as shown in Figure 5.1-31. These elevated acetone and toluene detections are considered anomalous for the following reasons: (1) neither was detected in the solid media sample taken at TD in this borehole (LANL 2009, 108012), (2) they are currently only represented in the initial round of sampling for this new well, (3) these samples were retrieved under expedited sampling conditions, and (4) similar detections are not observed in any pore-gas data obtained from the other MDA T wells. Additional sampling rounds at vapor-monitoring well 21-607955 will determine whether these detections are indicative of deep (900+ ft bgs) conditions beneath MDA T or whether they are a temporary condition resulting from recent drilling activities."

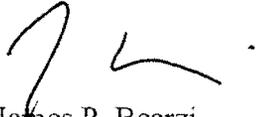
**NMED Comment:** Acetone and toluene "are currently only represented in the initial round of sampling for this new well," because there has only been one sample from vapor monitoring well 21-607955, which may or may not be representative of the contaminants in the vapor monitoring well in the future. Because vapor-monitoring well 21-607955 is the deepest well at MDA T, there are no other wells for comparison at a depth of 966ft. NMED agrees that future sampling events will confirm whether or not the acetone and toluene found in vapor monitoring well 21-607955 was anomalous or not.

The next Periodic Monitoring Report is due **April 30, 2010**. All submittals (including maps) must be in the form of two paper copies and one electronic copy in accordance with Section XI.A of the Order.

Messrs. Graham & Rael  
April 22, 2010  
Page 4

Please contact Kristen Van Horn at (505) 476-6046, should you have any questions.

Sincerely,



James P. Bearzi  
Chief  
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB  
K. Roberts, NMED HWB  
K. Van Horn, NMED HWB  
S. Yanicak, NMED DOE OB, MS M894  
T. Skibitski, NMED DOE OB  
L. King, EPA 6PD-N  
V. George, MS M991  
K. Lynnes, MS M991

File: Reading and LANL '10, TA-21 (SWMU 21-016(a)-99)