



BILL RICHARDSON
Governor

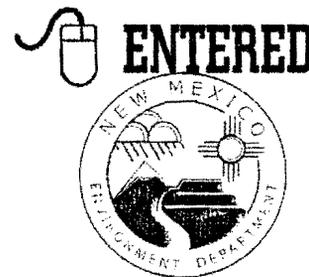
DIANE DENISH
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TA21

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RON CURRY
Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

February 4, 2010

Michael J. Graham
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Los Alamos, NM 87545

George J. Rael
Environmental Operations Manager
Los Alamos Site Office
Department of Energy
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**RE: APPROVAL WITH MODIFICATIONS
PHASE III INVESTIGATION REPORT FOR MATERIAL DISPOSAL
AREA T, AT TECHNICAL AREA 21, REVISION 1
LOS ALAMOS NATIONAL LABORATORY
EPA ID #NM0890010515
HWB-LANL-09-045**

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) *Phase III Investigation Report for Material Disposal Area T at Technical Area 21, Revision 1* (Report), dated December 23, 2009 and referenced by LA-UR-09-8109/EP2009-0676. NMED has reviewed the Report and hereby issues this Approval with the following modifications.

Comments

1. In Table 4.5-1 (Summary of Pore-Gas Field-Screening Results, February 2009 – November/December 2009) the percent oxygen (O₂) and percent carbon dioxide (CO₂) readings vary considerably. The O₂ percent varies within the same vapor well and same sampling port during different sampling events. For example, over time the percent O₂ varies from 16.5% to 22.1% in vapor well 21-25262 port 5, 329.5 – 334.5



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feet below ground surface. The percent O₂ ranges from a minimum of 15.5% (borehole 21-25264, 8/19/2009, 349.5 – 354.5 feet) to a very unlikely maximum of 24.7% (borehole 21-607955, 12/3/2009, 946.2 – 952.1 feet) (*see* Table 4.5-1). These variations call into question other values measured in the field. No revision to the Report is necessary; however, the Permittees must discuss the wide range of O₂ readings in future Periodic Monitoring Reports. At a minimum, the Permittees must ensure proper instrument calibration and always sample the percent O₂ and percent CO₂ until they are stabilized and representative of subsurface pore-gas conditions, then collect samples for volatile organic compounds (VOCs).

2. On page 25, Section 6.3.1 (VOCs), paragraph 6, appears as:

Unlike most other VOCs detected at MDA T, time-averaged chloroform concentrations observed in samples collected from Port 1 in vapor-monitoring wells 21-603059 and 21-25262 are distinctly higher than in vapor-monitoring wells 21-603058 and 21-25264, resulting in the S-shaped distribution with depth previously discussed in section 6.2 above. This distribution may indicate that chloroform may be derived from a different source (a source nearer to vapor-monitoring wells 21-603058 and 21-25262 such as the former building 21-035 influent pipes) than the other representative VOCs identified at MDA T. The other VOCs are generally more consistent with a source located nearer to vapor-monitoring well 21-25264.

The former treatment plant outfall at building 21-257 located immediately east of MDA T has been identified as a potential source of subsurface vapor contaminants for MDA T (LANL 2009, 105645). This

The Permittees must submit a corrected replacement page for this section of the Report.

3. NMED concurs with the Permittees' decision, discussed in Section 8.0 (Conclusions), to "[c]omplete a groundwater monitoring network evaluation by April 30, 2010, that defines the locations, depths, and objectives for new groundwater and vadose-zone monitoring wells near MDA T. The evaluation will be based on an updated geologic model, source locations, and contaminant observations and will identify potential gaps in the existing groundwater monitoring network." VOCs (acetone, toluene) and tritium, albeit at very low concentrations, were found 300 feet from the groundwater table. While the Permittees' calculated screening values (SV) (based on the maximum pore gas concentration and the groundwater screening level) are below 1.0 for these contaminants, the presence of any contaminant in groundwater must be addressed, even if the constituents are screened out as a potential threat to the groundwater by the Permittees. The groundwater monitoring network evaluation must be submitted to NMED no later than July 2, 2010.
4. In the discussion of the laboratory results, the Permittees discuss vapor monitoring wells 21-25262 and 21-607955 within the same paragraph. The discussion would be more understandable if the sampling results from the two vapor monitoring wells were discussed separately. For example, in Section 6.2.1 (Solid Media) page 18, paragraph 4 the Permittees state "[c]hloride was detected in 17 of 25 samples collected from BH 21-607955 and in seven of eight samples collected from BH 21-

25262. Detected concentrations ranged from 1.99-32 mg/kg with the maximum reported in BH 21-607955 at 22-23 ft bgs in Qbt 3." It is not clear if the reported concentrations are from both vapor monitoring wells or only from vapor monitoring well 21-607955. The discussion appears to compare the wells, which may not be appropriate, especially since in Section 6.3 (Potential Sources of Subsurface Vapor Contamination) the Permittees discuss that there may be a different contaminant sources on the north and south side of the site. In the future, the Permittees must discuss sampling results separately. No revision to the Report is necessary.

5. In Section 6.2.2 (Subsurface Vapor), Section 6.2.2.1 (VOCs), and Section 6.3.1 (VOCs) the Permittees mention that the data distribution for several contaminants create an S-shaped curve when plotted. In Section 6.3.1 (VOCs), the Permittees state, "[u]nlike most other VOCs detected at MDA T, time-averaged chloroform concentrations observed in samples collected from Port 1 in vapor-monitoring wells 21-603059 and 21-25262 are distinctly higher than in vapor-monitoring wells 21-603058 and 21-25264, resulting in the S-shaped distribution with depth previously discussed in section 6.2 above. This distribution may indicate that chloroform may be derived from a different source (a source nearer to vapor-monitoring wells 21-603059 and 21-25262 such as the former building 21-035 influent pipes) than the other representative VOCs identified at MDA T." The Permittees do not explain how an S-shaped data curve demonstrates that the contaminants (like chloroform or TCE) come from different sources. No revision to the Report is necessary; however, in future Periodic Monitoring Reports, the Permittees must elaborate on their interpretation of data curves, or remove the reference.

Specific Comments

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

Permittees' Statement: "In addition to solid media sampling, vapor samples are being collected at each permanent MDA T vapor-monitoring well on a monthly basis. As of December 2009, the following vapor sampling activities have been completed at MDA T.

- Vapor-monitoring wells 21-603058, 21-603059, and 21-25264: 12 rounds of subsurface vapor samples were collected between October 2007 and November 2009 and submitted for VOC and tritium analyses (rounds 1–12).
- Vapor-monitoring well 21-25262: six rounds of subsurface vapor samples were collected monthly between June 2009 and November 2009 and submitted for VOC and tritium analyses (rounds 7–12).
- Vapor-monitoring well 21-607955: one (initial) round of subsurface vapor samples was collected in December 2009 and submitted for VOC and tritium analyses (round 12).

Per the approved work plan, vapor samples were collected from vapor-monitoring well 21-607955 within 14 days of well installation on December 2–3, 2009, between scheduled monthly sampling rounds at other MDA T wells (LANL 2009, 106762; NMED 2009, 105691; NMED 2009, 106833). Therefore, for discussion purposes in this report, these samples are considered to be part of sampling round 12 (November 2009)."

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 "12th 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). No revision to the Report is necessary; however, 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. In addition, the Permittees must explain the rationale for monthly sampling, since quarterly sampling is ongoing.

2. Section 3.4, Deviations, page 7, paragraph 2:

Permittees' Statement: "Results for several geotechnical samples collected at BH 21-607955 were not received from the analytical laboratory by December 15, 2009. Thus, these results could not be included in the geotechnical data presentation of this revised report (section 4). These data will, however, be included in the data presentation of the January PMR to be provided to NMED by January 31, 2010."

NMED Comment: The Permittees must submit the geotechnical laboratory data as an appendix to the current Report so that all relevant data is in one comprehensive document.

3. Section 6.2.2, Subsurface Vapor, page 20, paragraph 2:

Permittees' Statement: "Acetone was detected at low concentrations or not detected in vapor-monitoring wells 21-25262, 21-25264, 21-603058, and 21-603059 throughout the sampling period. In vapor-monitoring well 21-607955, however, results from the initial sampling round indicate an anomalous detection of acetone at TD (950 ft bgs) at a concentration of 30,000 $\mu\text{g}/\text{m}^3$. This elevated acetone detection was considered anomalous for the following reasons: (1) acetone was not detected in the solid media sample taken at TD in this borehole; (2) it was detected only in the initial round of sampling for this new well; (3) it was retrieved under expedited sampling conditions; and (4) a similar detection is not observed in any pore-gas data

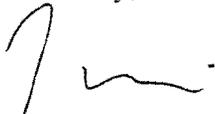
obtained from the other MDA T wells. Additional sampling rounds at vapor-monitoring well 21-607955 will determine whether this detection is indicative of deep (900-plus ft bgs) conditions beneath MDA T or whether it is anomalous."

NMED Comment: Acetone "was only detected 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 total depth (966ft). NMED agrees that future sampling events will confirm whether or not the acetone found in vapor monitoring well 21-607955 was anomalous or not.

The Permittees must submit the replacement pages, the inserts for the Report and the geotechnical data (*see* Specific Comment 2) to NMED no later than **March 5, 2010**. Additionally, the groundwater monitoring network evaluation report must be submitted to NMED no later than **July 2, 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.

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