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**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

February 12, 2007

David Gregory
Federal Project Director
Los Alamos Site Office
Department of Energy
528 35th 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 MODIFICATIONS
INVESTIGATION REPORT FOR MATERIAL DISPOSAL AREA A AT
TECHNICAL AREA 21, SOLID WASTE MANAGEMENT UNIT 21-014
LOS ALAMOS NATIONAL LABORATORY (LANL)
EPA ID #NM0890010515
HWB-LANL-06-023**

Dear Messrs. Gregory and McInroy:

The New Mexico Environment Department (NMED) is in receipt of the United States Department of Energy and the Los Alamos National Security, LLC (the "Permittees") document entitled *Investigation Report for Material Disposal Area A, Solid Waste Management Unit 21-014, at Technical Area 21* (Report) dated November 2006 and referenced by LA-UR-06-7902 (EP2006-0835). NMED has reviewed this document and hereby approves this document with the modifications described in the following comments.

Comments:

1. Section 5.2 Screening Levels and Cleanup Goals, pg. 27:



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NMED Comment: This section discusses the Permittees' use of the industrial, construction worker, and recreational scenarios for the human health screening assessments. However, the Permittees did not discuss their use of the residential scenario as is presented in Appendix I (Risk Assessment). The Permittees must revise this section to include the residential scenario.

2. Section 7.1.1.1 DP Canyon Slope, pg. 31:

Permittees Statement: "The vertical and lateral extent of americium-241, plutonium-238, and plutonium-239 are defined in the surface and shallow subsurface. Americium-241, plutonium-238, and plutonium-239 concentrations decreased with depth at all sampling locations (except location 21-26493 for plutonium-238 and plutonium-239). Plutonium-238 and plutonium-239 were detected in the 1.5-2 ft sample at location 21-26493 along the eastern drainage adjacent to MDA A. Samples from locations 21-24776 and 21-24778 collected as part of the investigation as MDA U farther to the east did not detect plutonium-238 and plutonium-239 from surface to 120 ft bgs."

NMED Comment: Locations 21-24776 and 21-24778 at MDA U are too far away from MDA A to be useful in characterization of MDA A. The subsurface has not been characterized for plutonium-239 at location 21-26493. The residential scenario used for the human health risk assessment suggests that the Permittees should have collected data at least 10 feet below ground surface. Because this was not done, the Permittees must resample at this location to at least 10 feet below ground surface or designate this area to be excluded as part of any future land use change because of unknown risk or dose.

3. Section 7.1.2 Pore Gas, pg. 32:

NMED Comment: The tritium activity detected at location 21-26593 (1,092,486 pCi/L at 35 feet) is the highest detected tritium in any soil gas samples collected during the recent investigations at other MDAs at TA-21. The concentrations in the surrounding boreholes at MDA A are elevated, although not as high. Such concentrations at this depth may indicate deeper contamination via fractures. Increasing tritium concentrations with depth suggest 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. The Permittees must therefore return to location 21-26593 to define the extent of tritium and vapor-phase VOC contamination. The Permittees must collect pore gas samples beginning at 35 feet below ground surface. Pore gas samples must be collected at 20-foot intervals and screened for VOCs and tritium. Concentrations below half the calculated air/water partitioning limits, based on tap water screening levels, WQCC standards, or EPA MCLs can be used as an indicator that total depth has been reached in the boring.

In the approved work plan, the Permittees state that “[i]f VOCs are detected in the vapor samples following drilling, a vapor-monitoring plan will be submitted to NMED as described in §IV.C.2.c.vi of the Consent Order.” The Permittees have not addressed the deviation from this requirement. Following the additional pore-gas sampling at location 21-26593, the Permittees must show that the levels of vapor-phase VOCs will not impact groundwater, and discuss the need for a vapor-monitoring plan.

4. Section 7.3.1 Human Health Risk Screening, pg. 34:

NMED Comment: This section does not include the summary of risks associated with the residential scenario, although this scenario was evaluated in the human health risk assessment (Appendix I). NMED understands that the residential scenario is not a decision scenario for the determination of further investigation or corrective action. This scenario was, nevertheless, evaluated to determine the need for land use restrictions. In addition, a conclusion is made that there is no potential for unacceptable dose or risk to human health for the decision scenarios, and a recommendation for further investigation or corrective action is not warranted. Because the residential scenario exceeds the NMED target risk level of 10^{-5} due to the presence of tetrachlorodibenzodioxin [2,3,7,8-], land use restrictions are required for the site or the site must be remediated to residential levels. This section should include the residential scenario to accurately reflect the results of the risk assessment presented in Appendix I, and to justify the need for land use restrictions.

5. Table H-2.2-16 Summary of Radionuclides Detected or Detected Above Background/Fallout Values for the MDA A Mesa Top, pg. H-112:

NMED Comment: This table does not include the data for sampling location 21-26493. The Permittees must revise the table accordingly.

6. Section I-3.2 Current and Reasonably Foreseeable Future Land Use, pg. I-6:

NMED Comment: The fourth paragraph of this section indicates that the residential scenario is evaluated for informational purposes only. The Permittees do not clearly describe what purpose this information serves. Similar statements are made throughout Appendix I. The reason a residential scenario is included as a future land use is to determine the need for land use controls or other type of institutional control, in the event land use were to change from current uses. The Permittees must provide a rationale as to why the residential scenario was evaluated.

7. Section I-3.3 Human Health Receptors and Exposure Pathways, pg. I-7:

NMED Comment: The last paragraph of this section indicates that exposure pathways for pore gas are incomplete. This conclusion lacks a sound basis. According to Table I-3.5-2, Results of Pore Gas Screening Based on Maximum Detected Concentrations, a number of VOCs were

detected in pore gas, suggesting that vapor intrusion from the subsurface into a future building could be a potentially complete exposure pathway. U.S. EPA's *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Soil Vapor Intrusion Guidance)* EPA 530-F-02-052, OSWER, Washington, D. C. provides default shallow soil gas (5 feet or less below ground surface) and deep soil gas (greater than 5 feet bgs) screening levels that are protective of indoor air. The screening values for a 1×10^{-5} risk and a hazard index (HI) of 1.0 should be used. In addition, this guidance references the use of a spreadsheet model, such as the Johnson and Ettinger model, which can also be used. The Permittees must provide additional lines of evidence for determining that the pore gas data are not applicable to the risk assessment as a source for indirect exposure via inhalation. Otherwise, the data should be used in a screening evaluation of this pathway.

8. Section I-4.3 Interpretation, pg. I-17:

NMED Comment: The second paragraph in this section indicates that the total estimated excess cancer risk for the residential land use is approximately 3×10^{-5} which is above the NMED target level of 10^{-5} due to the presence of tetrachlorodibenzodioxin [2,3,7,8-]. The exceedance of the NMED target level justifies the need for land use or institutional controls in the event that the site was to change from the current industrial land use. The Permittees must clarify that the residential risks are presented to justify the need for land use or institutional controls.

9. Section I-5.4.7 COPECs Contributing to PAUF-Adjusted HIs Greater Than 1, pg. I-22:

NMED Comment: The second paragraph indicates that the ecological screening assessment utilized the 95% upper confidence level of the mean (UCL95) even if the UCL95 was higher than the maximum concentration. Standard risk assessment practice is to use the lower of the UCL95 or maximum concentration, if adequate samples have been collected to estimate a population mean (Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites, Office of Solid Waste and Emergency Response, U.S. EPA, OSWER 9285.6-10, December 2002). The approach taken was more conservative. However, in future risk assessments, the maximum should be used if the UCL95 is predicted to be higher than the maximum when adequate numbers of samples are collected to estimate a population mean.

10. Section I-6.1 Human Health, pgs. I-24 and I-25:

NMED Comment: This section summarizes the results of the human health screening risk assessment and states that the total estimated excess cancer risks were below the NMED target level of 10^{-5} for industrial and construction worker exposures at MDA A and for recreational exposure on the DP Canyon slope. However, this section does not include the results from the residential risk evaluation which were above the NMED target level of 10^{-5} due to tetrachlorodibenzodioxin [2,3,7,8-]. As stated in a previous comment, the exceedance of the NMED target level for residential exposure justifies the need for land use or institutional controls

in the event that the site is no longer under Laboratory control. The Permittees must include a brief discussion on the results of the residential risk results which support the need for land use restrictions for this area.

11. Figure I-3.0-1 Human Health Conceptual Site Model, page I-29:

NMED Comment: The soil pore gas data indicate detections of a number of volatile organic compounds (VOCs). However, the conceptual site model does not address the presence of vapors in the subsurface as a potential source contributing to the vapor intrusion exposure pathway. The Permittees must revise the figure to include inhalation exposure from subsurface vapors and revise the text to include rationale for including/excluding this pathway from further analyses.

The Permittees must address these modifications within 30 days of receipt of this letter. Noncompliance with the modifications outlined in the approval letter may result in automatic rescission of the Report approval and potentially subject the Permittees to an enforcement action. Furthermore, the Permittees shall not respond to comments in an approval with modifications unless NMED specifically requires a response, in which case the response must be limited to only those required by NMED. All submittals must be in the form of two paper copies and one electronic copy in accordance with section XI.A of the Consent Order. Should you have any questions regarding this letter, please contact Darlene Goering of my staff at (505) 476-6042.

Sincerely,



James P. Bearzi
Chief
Hazardous Waste Bureau

JPB: dxg

cc: D. Goering, NMED HWB
J. Young, NMED HWB
S. Yanicak, NMED DOE OB, MS J993
L. King, EPA 6PD-N
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file: Reading and [REDACTED]