



BILL RICHARDSON
GOVERNOR

TA-50
State of New Mexico
ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Telephone (505) 428-2500
Fax (505) 428-2567
www.nmenv.state.nm.us



RON CURRY
SECRETARY

DERRITH WATCHMAN-MOORE
DEPUTY SECRETARY

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

December 16, 2003

Mr. G. Pete Nanos, Director
Los Alamos National Laboratory
P.O. Box 1663, Mail Stop A100
Los Alamos, New Mexico 87545

Mr. David Gregory, Project Manager
DOE-Los Alamos Site Office
528 35th Street, Mail Stop A316
Los Alamos, New Mexico 87544

SUBJECT: SECOND NOTICE OF DEFICIENCY (NOD)
INVESTIGATION WORK PLAN FOR MATERIAL DISPOSAL
AREA C, REVISION 1
LOS ALAMOS NATIONAL LABORATORY
EPA ID# NM0890010515

Dear Messrs. Nanos and Gregory:

The New Mexico Environment Department (NMED) has completed a review of the Department of Energy and the Los Alamos National Laboratory's (collectively, the Permittees) document titled *Investigation Work Plan for Material Disposal Area C, Solid Waste Management Unit 50-009, at Technical Area 50, Revision 1*, (Work Plan) submitted November 7, 2003 and referenced by LA-UR-03-8201. This document is a revised version of the Investigation Work Plan for MDA C, submitted on July 31, 2003.

NMED completed a technical review of the document, in accordance with 20.4.2.200.A(7) NMAC and 20.4.1 NMAC, and has determined that this Work Plan does not meet NMED's requirements for the investigation of Material Disposal Area C (MDA C). Consequently, NMED is providing this Notice of Deficiency (NOD) for the Work Plan. NMED's comments are included in Attachment 1. The Permittees must address these comments and re-submit the document within thirty (30) days of receipt of this letter. NMED strongly urges the Permittees to review the requirements described in the November 26, 2002 NMED Order in preparing their revised Investigation Work Plan for MDA C.



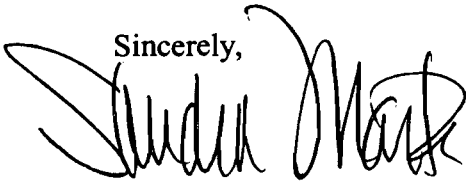
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NMED does not formally review or comment on Historical Investigation Reports (Appendix B of the Work Plan). NMED reviewed Appendix B only as a reference document and to determine whether all of the relevant and required sections were included.

If you have any questions regarding these comments, please contact Carolyn Cooper at (505) 428-2539.

Sincerely,



Sandra Martin
Acting Chief
Hazardous Waste Bureau

cc: C.Voorhees, NMED DOE-OB
S. Yanicak, NMED DOE-OB, MS J993
J. Schoepner, NMED GWQB
L. King, EPA, 6PD-N
D. Cobrain, NMED-HWB
D. McInroy, RRES-RS, MS M992
J. Vozella, DOE OLASO, MS A316
B. Ramsey, LANL, RRES-DO, MS J591
D. Stavert, LANL, RRES-DO, MS J591
N. Quintana, LANL, RRES-ER, MS M992
J. Hopkins, RRES-RS, MS M992

File: Reading and ~~LANL TA 50 (MDA G, 50-009)~~

Attachment 1

Comments on MDA C Investigation Work Plan, Revision 1

General Comment 1

The Permittees have misinterpreted NMED's June 17, 1999 position paper titled "Determination of Extent of Contamination." The position paper states, "The vertical and horizontal extent of contamination at a specific site (including off-site migration) is considered adequately determined once concentrations of (1) inorganic constituents (including radionuclides) have been spatially (in three dimensions) delineated relative to background concentrations and (2) organic constituents have been spatially (in three dimensions) delineated relative to practical quantitation limits." The position paper further states that the Permittees *may petition NMED for a variance* from the above-stated requirements on a case-by-case basis. The Permittees have not petitioned NMED regarding MDA C.

The position paper does not state that a decreasing trend defines extent of contamination. The Permittees admit in their response to NMED's comments that they expect to detect tritium at both of the proposed sampled depths in the boreholes at MDA C (below the disposal pits and at total depth) and that they expect to see a decreasing trend in the concentration of contaminants. NMED requires the Permittees to advance borings to depths that do not show evidence of contaminants. All improper references to NMED's position paper, including Appendix G, must be removed from the Work Plan. Additionally, the Permittees' incorrect interpretation of the position paper is not acceptable as the justification for not following the investigation requirements included in NMED's November 26, 2002 Order.

General Comment 2

The requirements listed in NMED's Order dated November 26, 2002 are the minimum requirements for investigation of MDA C. Based on the data and information in the Historical Investigation Report and other data provided by the Permittees, NMED may require additional work at MDA C in order to adequately determine the nature and extent of contamination at the site. NMED is not required to provide rationale or the technical bases for imposing additional requirements, including specifications for collecting QA/QC samples, for the investigation.

General Comment 3

The Data Interpretation and Identification of Investigation Objectives Section (2.7.3.2), which is part of the Summary of Historical Investigations, is unnecessarily lengthy. The section includes six pages of data interpretation and evaluation and a description of the current knowledge of the nature and extent of contamination at MDA C. A previous Section (2.7.3) lists the Phase I RFI Results in five short bulleted items. These items should be expanded to include the pertinent information from Section 2.7.3.2 and references to relevant figures and data tables. A short paragraph stating the interpretations and conclusions that the Permittees have made based on the previous

investigations conducted at MDA C may be included at the end of the bulleted items. The Data Interpretation Section (2.7.3.2) should be deleted. Additionally, the Investigation Objectives are identified and listed in Section 1.2 of the Work Plan and they do not need to be described here.

General Comment 4

The Permittees do not intend to field screen samples during the investigation at MDA C and state that the concentrations of contaminants in the subsurface at MDA C are sufficiently low that field screening is ineffective for the purpose of identifying samples for laboratory analysis. NMED requires field screening in order to help guide the investigation, enable the Permittees to determine the extent of contamination at the site, and to minimize the need for additional investigation and field work at the site in the future. NMED notes that the Permittees will be continuously coring the boreholes and that samples will be readily available for field screening.

The Work Plan contains conflicting statements regarding radionuclide screening that will be performed during the investigation of MDA C. NMED requires clarification of the methods, purpose, and use of the radionuclide screening that will be employed. The Air Rotary subsection of Section 5.1.1 (Drilling Protocol) states, "If radiological contamination is detected using field screening methods at the proposed TD, the boring will be advanced until contamination is no longer detected." Section 5.1.2 (Collection of Tuff Samples) states, "Samples will be collected from intervals where contamination is suspected because field screening results are elevated and/or visual inspection identifies fractures or staining." These statements appear to contradict the Screening of Core Samples subsection of Section 2.7.3.1 (Field Screening Results) that states, "there was no significant difference in field screening results for samples having radionuclides within and above local BVs."

NMED requires information regarding the lamp that was used in the photoionization detector (PID) used in previous field investigations at MDA C, because there were no detects of VOCs in the field during those investigations. The Permittees must consider using a PID with a sufficiently sensitive lamp, flame ionization detector (FID), field gas chromatograph (GC), or another instrument to field screen core samples for VOCs.

The Permittees claim in their response to NMED's comments that, "Field screening for tritium will not be performed, as there are no field screening methods capable of detecting tritium and locations of tritium samples are not dependent on field screening results." NMED disagrees that there are no field screening methods capable of detecting tritium. It is NMED's understanding that there are at least two types of instruments that can field-detect tritium in soil/tuff. The electret chamber can be used to scan a core to determine gross beta levels, and a liquid scintillation counter can be used to determine a more definitive tritium concentration. The Permittees must consider methods for field screening core samples for tritium.

General Comment 5

NMED requires clarification regarding the proposed analysis of samples for dioxins and furans. In the Permittees' response to comments, Comment 13a states, "LANL modified the scope of work to call for analysis of dioxins and furans in the samples collected nearest the base elevation of each disposal pit." However, the Work Plan states in Section 4.2.4 (Analytical Suites), "tuff samples collected directly beneath the Chemical Pit will be analyzed for dioxins and furans...tuff samples from other locations will not be analyzed for dioxins or furans"). Additionally, neither Table 3 nor Figures 11 through 24 indicate that dioxins and furans will be included as analytes for the borings.

General Comment 6

The fifth paragraph of Section 2.7.2 (Phase I RFI Field Investigations) indicates that the results of the geophysical surveys were not entirely conclusive in determining the locations of the pits. The paragraph states, "Sufficient anomalies were detected in the areas of Pits 1 through 5 to infer general pit boundaries; however, the anomalies extend over the reported width of the pits making it difficult to distinguish the boundaries between the pits. No clear anomalies were observed to indicate the boundaries of Pit 6 or the Chemical Pit." NMED believes that the locations of the disposal pits and shafts must be accurately determined in order to ensure that the site can be sufficiently and safely investigated. If the locations of the pits have not been determined, as is indicated by this statement, then the Permittees must develop a plan to make such determinations prior to conducting work under the Investigation Work Plan, as stated in NMED's disapproval letter dated November 19, 2003. This plan, if needed, shall be included as an appendix to the Work Plan.

NMED requires clarification of the statement in Historical Investigation Report, Section B-2.1.2 (Geophysical Survey Results), subsection "2002 Geophysical Survey" that notes that the anomalies from the survey extend to a greater distance than the reported pit boundaries and that these differences will be taken into consideration when locating new boreholes during this investigation.

General Comment 7

The Permittees claim in their response to NMED's comments that advancing one deep boring (Borehole M) at MDA C will be sufficient to determine the vertical extent of the VOC plume at the site. The Permittees state, "The results of previous investigations of the VOC plume at MDA L, which is far more extensive than that at MDA C, indicate that the vertical extent of VOC migration is controlled by stratigraphic features (i.e., permeable units that allow rapid communication with the atmosphere) and, thus, does not vary widely across the site." NMED considers all sites on an individual basis and will not accept preliminary conclusions from one site to be used at a different site.

General Comment 8

The Permittees have proposed advancing angled boreholes to investigate below Pit 6. They claim that extending the boreholes to greater depths would not generate useful information because the boreholes would extend beyond the boundaries of the disposal pit. The Permittees should be aware that if angled boreholes are advanced and

contaminants are present in the bottom interval, then NMED will require further investigation and advancement of additional boreholes to determine the extent of contamination. The Permittees must include the advancement of additional borings in the Work Plan.

General Comment 9

The Investigation Derived Waste (IDW) plan (Appendix F) lacks details regarding management of the wastes that will be generated during the investigation at MDA C. Basic elements of an IDW plan, such as the types of wastes that are anticipated to be generated and the sampling, characterization and disposal of these wastes, are not described. NMED requires the Permittees to include details regarding the characterization, management, containerization, and anticipated volume generation of wastes during the investigation of MDA C in the IDW plan.

General Comment 10

NMED requires clarification regarding how nuclear safety requirements would affect the type of drilling to be conducted. For example, Section 5.1.1 (Drilling Protocol) states, "Vertical boreholes will be drilled using the hollow-stem auger method and angled boreholes will be drilled using either the hollow-stem auger or air-rotary method depending on nuclear safety requirements."

General Comment 11

The Permittees claim in Table 4 that "Previous sampling of the two existing vapor wells at MDA C has shown that results do not change appreciably over time" and that "resampling of the existing wells is not necessary." NMED disagrees with these statements. According to the data provided in Table D-4, some vapor-phase contaminants are increasing over time (for example, TCE at 260 feet in borehole 50-09100 increased from 680 ppbv in August 2001 to 7000 ppbv in January 2003); some vapor-phase contaminants are decreasing over time (for example, TCE at 90 feet in borehole 50-09100 decreased from 9400 ppbv in August 2000 to 3300 ppbv in January 2003); and some contaminants appear as detections for the first time in 2003 (for example, chloroform at 315 feet in borehole 50-09100 is noted as a detection only in January 2003 at 190 ppbv).

The only data provided from borehole 50-10131 below a depth of 150 feet is from sampling conducted in January 2003. Section D-3.3 (VOCs in Pore-Gas Samples) states that Table D-4 presents a summary of all of the detected VOCs from all sampling in both boreholes. Therefore, NMED assumes that these constituents were not detected prior to January 2003. The Permittees' claim that results do not change appreciably over time is not valid. NMED continues to insist that boreholes 50-09100 and 50-10131 must be monitored for pore-gas VOCs and tritium at the same frequency as the newly installed boreholes in order to accurately track the trends of the contaminant plumes at MDA C.

General Comment 12

Section 5.2.2 (Collection of Pore-Gas Samples) states, "The subsurface vapor sample at TD will be collected only if the conditions for purge-gas stabilization according to

LANL-ER-SOP-6.31 are met.” LANL’s SOP does not provide any directions or procedures to follow if stabilization conditions are not attained. When collecting pore-gas samples, the sample interval must be purged until the proper sampling conditions are achieved.

General Comment 13

NMED sent a letter to the Permittees dated November 19, 2003 regarding the Department’s concerns with the schedule in Section 7.0.

General Comment 14

The “frequency of detects” tables (Tables B-10, B-12, B-14, B-20, B-22, B-24) are unnecessary. The Permittees shall delete these tables.

General Comment 15

NMED has reviewed the surface sampling data and Figure B-3 and has determined that the extent of surface radionuclide contamination in the southeast portion of the site has not been defined. Am-241, Pu-238, and Pu-239 were detected in sample locations 50-08346, 50-08396, and 50-08446 on the far eastern boundary of MDA C. NMED is concerned that contamination may be present outside the site boundary. The Permittees shall propose additional surface sampling for radionuclides east of the sample locations mentioned above.

General Comment 16

The data and information provided in the Work Plan and the Historical Investigation Report are not adequate to support the Permittees’ proposed alternative scope of work as described in Section 4.0 (Scope of Activities) and Table 4 (Summary of Proposed Alternatives to NMED Order Specifications and Justifications for Alternative). NMED has accepted some of the Permittees’ proposed alternatives to the scope of work. However, the justifications provided for Items 1, 2, 5, 8, 10, 13, and 16 in Table 4 are not acceptable. The Permittees must clarify and provide adequate justification for not doing work required by NMED for the investigation of MDA C.

The scope of work for the proposed investigation is not extensive enough to define the lateral and vertical extent of the VOC or tritium plumes in the subsurface tuff. The Permittees have proposed one additional boring in Revision 1 to the Work Plan; however, additional borings are necessary for adequate characterization of the site. Plans must be included to extend boreholes to greater depths if field screening indicates the presence of contaminants at the bottom interval of any borehole. Additionally, field screening must be conducted in order to accomplish these objectives. NMED provided specific comments on the need to expand the scope of work of the investigation in the September 4, 2003 Comments on the MDA C Investigation Work Plan. NMED’s position has not changed. Refer to General Comment # 1 in this Attachment for NMED’s comments on the position paper on determination of extent of contamination. Refer to General Comment # 4 for NMED’s comments on field screening for contaminants. Refer to General Comment # 11 for NMED’s comments on sampling of the existing vapor wells.

General Comment 17

The rationale provided by the Permittees in Table 5 (Comparison of Borehole Locations Specified in November 26, 2002 NMED Order and Existing and Proposed Boreholes) for not proposing to drill boreholes in many of the locations required by NMED is not adequate or appropriate. Insufficient drilling space is an acceptable justification for not advancing boring in certain locations (for example, along the north side of Pit 6). Lack of drilling space is not acceptable justification if the exact locations of the pits have not been determined (refer to General Comment #6). Previously drilled boreholes that contain contaminants in the bottom interval are not appropriate or sufficient for use in determining the extent of contamination. In addition, advancing fewer angled boreholes along pits with the intent of extending sample coverage beneath the pits, instead of advancing a greater number of vertical boreholes along the pits, may not achieve the objective of determining the extent of contamination (refer to General Comment #8). The Permittees must propose additional borings to adequately investigate the site.

General Comment 18

Section XI.B.11 of the Order contains a list of tables for inclusion in Investigation Work Plans. Item number 1 is "summaries of regulatory criteria, background, and applicable cleanup levels". The Permittees shall include such information in the Work Plan. The information may be included on the tables of analytical data or as separate tables.