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TA-50
2003



RON CURRY
SECRETARY

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DEPUTY SECRETARY

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

September 4, 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-OLASO
528 35th Street, Mail Stop A316
Los Alamos, New Mexico 87544

**SUBJECT: DISAPPROVAL OF THE INVESTIGATION WORK PLAN FOR
MATERIAL DISPOSAL AREA C (MDA C)
LOS ALAMOS NATIONAL LABORATORY
EPA ID# NM0890010515**

Dear Messrs. Nanos and Gregory:

The New Mexico Environment Department (NMED) has reviewed the Investigation Work Plan for Material Disposal Area C, Solid Waste Management Unit 50-009, at Technical Area 50 at Los Alamos National Laboratory, submitted July 31, 2003 and referenced by LA-UR-03-3803.

NMED disapproves this work plan for the following reasons. NMED understands, based on the statements of the University of California and the U.S. Department of Energy (collectively the "Permittees"), that the Permittees must conduct a nuclear safety review and prepare "Authorization Basis" (AB) documentation prior to conducting field work. NMED further understands that the nuclear safety review may result in changes to the scope of work in the work plan. At this site, however, the nuclear safety review was not conducted prior to selecting the locations for subsurface exploration that are set forth in the work plan. The work plan states that the AB approval is not expected until November 3, 2003, the same date that fieldwork is scheduled to commence. The safety review may therefore delay or alter the scope of work, and may do so in a way that is not acceptable to NMED. NMED cannot approve a work plan with a scope of work that is subject to unilateral revision by the permittee. The safety review must be completed prior to submission of the work plan, so that NMED can properly review and approve the scope of work.



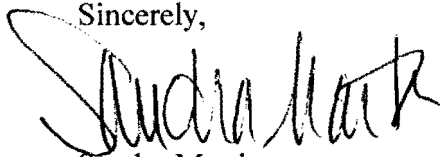
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Messrs. Nanos and Gregory
September 4, 2003
Page 2

Specific comments on the MDA C Investigation Work Plan are attached. The Permittees must address these comments and resubmit the document within thirty (30) days of receipt of this letter.

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

Sincerely,



Sandra Martin
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. 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
C. Nylander, RRES-WQH, MS K497

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

Attachment 1
General MDA C Investigation Work Plan Deficiencies

1) General:

Justification for altering the scope of work as described in the November 26, 2002 Order was not provided.

2) General:

The Permittees shall include the page, table, and figure numbers when referencing information from previous reports.

3) Executive Summary:

The acronym IWP references the Facility-Wide Installation Work Plan. The Permittees shall refer to this document as a work plan.

4) Section 1.0: Introduction: Footnote 1:

NMED does not agree with the need to include the disclaimer regarding radioactive waste data in this section or on the title page of the document. NMED maintains that it has the authority to regulate radioactive wastes, other than source, special nuclear and byproduct material as narrowly defined in the Atomic Energy Act of 1954, and to require the monitoring and reporting of radionuclides as necessary to properly regulate non-exempt wastes. The Permittees shall delete this disclaimer.

5) Section 2.4: Contaminant Transport Mechanisms and Potential Receptors:

The Permittees shall delete the reference to the future MDA C Corrective Measures Study (CMS). It is unknown at this time whether there will be a CMS for this site. All references to the CMS shall be deleted throughout the document.

6) Section 3.2.1: Stratigraphy:

The Permittees shall include brief descriptions of the stratigraphic units beneath MDA C. Move the text from Appendix I, Section I-2.0 to this section.

7) Section 3.2.3: Groundwater:

The claim that "to date, data obtained indicate that dry mesas such as Mesita del Buey show no evidence of perched aquifers" is unsubstantiated at this time and must be deleted. Perched groundwater was encountered under MDA L at 592 feet. (Refer to the letter from LANL to NMED, dated April 7, 1995 titled, "Notification of groundwater encountered below Material Disposal Area L"). In addition, the drill logs in Appendix C indicate "wet" zones suggesting saturated conditions may exist in the subsurface.

8) Section 4.0: Scope of Activities:

(a) The Permittees shall include a description of all proposed activities related to Investigation-Derived Waste (IDW) storage and disposal.

(b) Samples should be collected every 10 feet and in areas of higher permeability, such as interbedded surge beds, pumice deposits, and alluvial deposits found in the Bandelier

Tuff. Higher permeability lithologies and secondary fractures should be targeted as well (for example, rubbly basalt tops and bases, gravels of the Puye Formation).

9) Section 4.2.1: Sampling and Analysis Activities to Address Data Gap 1 (metal and radionuclide contamination in tuff beneath Pit 6):

(a) The data in this work plan indicate that contamination, including radionuclides, is extensive beneath Pit 6. Contaminants were detected at depth in several boreholes near and beneath Pit 6: Borehole 50-09101 (Am-241 at 112'), 50-09107 (Am-241 at 75', 95', and 108'), 50-09108 (Pu-238 and Sr-90 at 95'), and 50-09109 (Na-22 and Sr-90 at 113'). Many contaminant detections, including radionuclides, were at or near the bottom interval of the boreholes, which ranged in depth from 90 feet to 316 feet bgs. Neither the lateral or vertical extent of contamination has been determined.

(b) The scope of work to address this data gap proposes drilling only two boreholes (A and B), to depths of 140 to 150 feet. The data obtained from these two proposed boreholes will not be sufficient to determine the lateral and vertical extent of radionuclide and metals contamination in this area of the site. The Permittees shall modify the scope of work to propose additional vertical and angled boreholes to be drilled around and beneath (angled) Pit 6. The Permittees shall include plans for extending the depth of boreholes if contaminants are detected at the bottom of the borehole(s). Additional boreholes shall be sampled in accordance with the requirements listed in the NMED Order dated November 26, 2002.

10) Section 4.2.2: Sampling and Analysis Activities to Address Data Gap 2 (concentrations and spatial extent of VOCs in the vapor phase in subsurface tuff):

(a) Two boreholes have been sampled for pore-gas VOCs, 50-09100 and 50-10131. VOC contamination is present at many depths and at the bottom interval of both of these boreholes. Neither the lateral or vertical extent of contamination at the site has been determined. The highest TCE contamination was encountered at the bottom of borehole 50-09100 at 316 feet; the maximum concentration of TCE detected in this borehole was always below a depth of 200 feet. The concentrations of TCE and PCE are relatively constant in borehole 50-10131 to 200 feet and are present at detectable levels at the bottom of the borehole at 315 feet. Proposed Borehole M is located near 50-09100. The borehole's proposed total depth of 800 feet is likely to be adequate to assess the vertical extent of the contaminant plume in the northeast portion of the site. However, the data collected from borehole M will not be sufficient to determine the vertical extent of contamination for the entire 11.8 acre-site.

(b) Borehole A is located near borehole 50-10131. The proposed borehole has a planned total depth of 140 to 150 feet. In order to determine the vertical extent of the contaminant plume in the tuff beneath Pit 6, the Permittees shall drill the proposed borehole to at least 340 feet, 25 feet deeper than the deepest previously detected contamination in Borehole 50-10131 at 315 feet. The Permittees shall modify the scope of work to advance Borehole A to a depth of at least 340 feet. Plans shall be included for extending the borehole to greater depths if field screening indicates the presence of contaminants at the bottom interval of the borehole.

(c) The proposed sample interval for collecting vapor samples in borehole M is every 100 feet and at the bottom interval of the borehole. Sampling is proposed for boreholes A-L at only two depths: 40-50 feet and 140-150 feet (the planned total depth). The Permittees shall sample for VOCs at 10-foot intervals to screen for the presence of contaminants. Plans shall be included for extending the boreholes to greater depths if field screening indicates the presence of contaminants at the bottom interval of any borehole.

(d) There are no plans to sample the existing pore-gas monitoring boreholes 50-09100 and 50-10131 in conjunction with sampling of the new boreholes. NMED does not believe, and the data do not indicate, that the nature of the contaminant plume in the existing boreholes has been defined. The Permittees shall modify the scope of work to add sampling of all ports in boreholes 50-09100 and 50-10131 to the scope of activities.

(e) This section states, "surface flux may not always be an accurate indication of higher subsurface VOC concentrations". The results of the EMFLUX (surface flux) survey were used to determine the location of Borehole D, but no boreholes were proposed for the other locations where detected surface flux measurements were high at the site. In order to determine whether the surface flux and subsurface pore-gas results can be correlated, additional boreholes are needed in the locations with the highest surface flux measurements. The locations of highest surface flux are above the Chemical Pit and on the southern boundary of Pit 5. The Permittees shall modify the scope of work to propose additional vertical boreholes at the southern boundary of the Chemical Pit and at the southern boundary of Pit 5. Plans shall be included for extending boreholes to greater depths if field screening indicates the presence of contaminants at the bottom interval any borehole.

(f) The Permittees shall include a diagram of the general design for vapor monitoring well construction.

(g) The Permittees shall clarify the intent to instrument boreholes for monitoring of contaminants in pore gas. It is unclear whether the proposed boreholes will be completed as pore-gas monitoring wells, set up as temporary monitoring points, or left as open boreholes.

11) Section 4.2.3: Sampling and Analysis Activities to Address Data Gap 3 (concentrations and spatial extent of tritium in the vapor phase in subsurface tuff):

(a) During previous investigations, tritium was detected in almost every tuff sample at MDA C. Many tritium detections were at or near the bottom interval of the boreholes. In Borehole 50-09108, the highest tritium measurement was at the bottom of the borehole, indicating that the vertical extent of contamination has not been determined. The proposed number of boreholes will not provide sufficient data to determine either the lateral or the vertical extent of tritium contamination in the subsurface. The Permittees shall include the additional borehole locations described in the NMED Order dated November 26, 2002 to determine the spatial extent of the undefined tritium plume.

(b) The correlation of the data from subsurface tritium samples and the near-surface tritium probe samples is poor. In order to determine whether the near-surface and subsurface tritium results can be correlated, boreholes must be advanced in the locations with high near-surface tritium measurements. A high concentration of near-surface tritium was detected under Pit 6 (sample point 50-03-21472). Borehole A is proposed close to this location and will help define the extent of the tritium plume near Pit 6. However, there are no boreholes proposed for the other areas with high near-surface tritium detections. The Permittees shall modify the scope of work to propose an additional vertical boring west of Pit 4, near sample point 50-21467, the location of the highest near-surface tritium measurement. The source of the tritium in this area may be Shaft Group 3. Data from a borehole near 50-21467 and at the proposed Borehole K location will help define the extent of the subsurface tritium plume in this portion of the site. In addition, the Permittees shall modify the scope of work to include a vertical boring at the west end of Pit 2.

(c) The Permittees shall provide justification for the proposed sampling intervals. Sampling only at the proposed depths of 40 to 50 feet and 140 to 150 feet will not provide sufficient data to characterize the tritium plume. No depth appears to be the singular choice for sampling depth across the site. The highest detected tritium concentrations range in depths from 18 feet to 112 feet, with no detectable pattern. Additionally, there is no tritium data for borehole 50-10131. Include plans to sample for tritium at 10-foot intervals to screen for the presence of contaminants.

(d) Plans shall be included for extending boreholes to greater depths if field screening indicates the presence of contaminants at the bottom interval of any borehole.

12) Section 4.2.4: Sampling and Analysis Activities to Address Data Gap 4 (nature and extent of releases of metals, cyanide, and radionuclides to tuff beneath Pits 1-5, Shaft Groups 1 and 2, and the Strontium-90 disposal shaft):

(a) Radionuclides were detected at depth in several boreholes in the parts of the site relevant to this data gap: 50-09103 (Eu-152 and Am-241 at 80 feet; Sr-90 at 116 feet), 50-09105 (Pu-239 at 120 feet), and 50-09106 (Sr-90 at 115 feet; Pu-239 at 118 feet). The number of proposed boreholes is not adequate to determine the lateral extent of contaminants in this portion of the site. The Permittees shall modify the scope of work to propose additional vertical or angled boreholes around all of these pits and shafts in accordance with the requirements described in the November 26, 2002 Order.

(b) The proposed drilling exploration depths of 140 to 150 feet may not be adequate to determine vertical extent of contamination. Many radionuclide detections were at or near the bottom interval of the boreholes. The Permittees shall include plans to extend boreholes if field screening indicates the presence of contaminants at the bottom of any borehole.

(c) Borehole H: Based on the revised geophysical map (Figure B-7) of the pit locations, it appears that a vertical borehole can be drilled adjacent to the Strontium-90

shaft. The Permittees shall modify the scope of work to propose an additional borehole at this location.

(d) Borehole J: Based on the revised geophysical map (Figure B-7) of the locations of the pits, it appears that both vertical and angled boreholes can be drilled from the west side of Pits 1 and 3 to collect data on potential releases from these pits and from Shaft Group 2. The Permittees shall modify the scope of work to propose additional boreholes at these locations.

(e) Borehole L: The proposal to drill one borehole along the south boundary of Pit 1 will not provide adequate data to determine the lateral extent of contamination in this area. The Permittees shall modify the scope of work to propose additional vertical boreholes along the south side of Pit 1.

13) Section 4.2.5: Sampling and Analysis Activities to Address Data Gap 5 (extent of perchlorate, nitrate, dioxin, and furan contamination in tuff beneath MDA C):

(a) Dioxins and furans are not specifically noted in the historical report's review of waste inventory, but the inventory is admittedly incomplete. Additionally, these types of compounds are typically by-products of burning organic materials that contain or are in the presence of chlorine atoms. The chlorinated hydrocarbon TCE was commonly disposed at MDA C. Its presence is noted in the disposal history for several of the pits. In addition, Section 2.6 of this work plan quotes from the OU 1147 Work Plan that "chemical wastes were responsible for many fires at Areas B and C," and that there were five documented fires at MDA C between 1950 and 1958. Consequently, NMED requires analysis of all samples for dioxins and furans. The Permittees shall modify the scope of work to propose analysis of all samples for dioxins and furans.

(b) Section B-1.1 of the Historical Investigation Report notes that debris from the demolition of the Bayo site, which includes firing sites, was disposed of at MDA C. Additionally, Section B-1.1.2 notes that trinitrotoluene (TNT) element samples were disposed of in Shaft Group 3. The Permittees shall modify the scope of work to propose analysis of all samples for energetic and high explosives (HE) compounds.

14) Section 4.2.6: Sampling and Analysis Activities to Address Data Gap 6 (Potential Presence of Perched Groundwater Beneath MDA C):

The Permittees shall include a description of all activities that will be performed if perched groundwater is encountered in Borehole M or in any other borehole at the site. Include proposed well construction diagrams, sample suites, and plans for advancing additional boreholes.

15) Section 4.2.7: Sampling and Analysis Activities to Address Data Gap 7 (information on hydrogeologic properties and fracture characteristics of the vadose zone to support contaminant transport modeling in the vadose zone):

Include a description of the planned fracture investigation, including the location of the construction, the dimensions and depth of the proposed cut in the tuff, and whether any samples will be field screened for contaminants during construction activities.

16) Section 5.0: Investigation Methods:

(a) The Permittees shall describe all methods for conducting the proposed activities during the investigation. The work plan lists the Standard Operating Procedures (SOPs) to be followed during the investigation. The Permittees shall provide descriptions of investigation, sampling, and analytical methods and procedures to be employed in documents submitted to NMED.

(b) The Permittees shall include a description of all field screening methods. The work plan states, "total depth of boreholes may increase if elevated field screening is detected." The methods for VOC screening must be included, as well as the definition of "elevated field screening."

(c) Paragraph 3 of Section 4.2.1 notes that sampling may depend on radiation field screening. NMED requests voluntary submittal of the methods for radiological/tritium screening of samples.

17) Section 5.1.2: Collection of Tuff Samples:

(a) The Permittees shall provide a detailed description of sample collection, preservation, and preparation methods for laboratory analysis.

(b) The Permittees shall collect QA/QC samples as follows: Collect field duplicates at a rate of ten percent. Collect field blanks at a frequency of one per day. Collect equipment blanks from all sampling apparatus at a frequency of ten percent for chemical analysis. Collect equipment blanks at a frequency of one per day if disposable sampling equipment is used. The Permittees shall modify the scope of work to include these QA/QC samples.

18) Section 5.1.3: Collection of Pore-Gas Samples:

(a) The Permittees shall provide a detailed description of sample collection, preservation, and preparation methods for laboratory analysis.

(b) The Permittees shall collect QA/QC samples as follows: Collect field duplicates at a rate of ten percent. Collect field blanks at a frequency of one per day. Collect equipment blanks from all sampling apparatus at a frequency of ten percent for chemical analysis. Collect equipment blanks at a frequency of one per day if disposable sampling equipment is used. The Permittees shall modify the scope of work to include these QA/QC samples.

19) Section 5.2: Methods for Drilling and Sampling Borehole M:

(a) The Permittees shall add a subsection that provides a detailed description of the methods that will be followed for collection of groundwater samples, if perched groundwater is encountered during drilling at the site. Include methods for well construction.

(b) Radionuclides (Pu-239 and Am-241) and inorganic constituents (cyanide and selenium) have been detected in borehole 50-09100, the borehole closest to the location of the proposed Borehole M. The Permittees shall modify the scope of work to include

analyzing the samples collected from Borehole M for the full suite of contaminants, including dioxins and furans.

20) Section 5.2.2: Collection of VOC and Tritium Samples:

(a) The Permittees shall provide a detailed description of sample collection, preservation, and preparation methods for laboratory analysis.

(b) The Permittees shall collect QA/QC samples as follows: Collect field duplicates at a rate of ten percent. Collect field blanks at a frequency of one per day. Collect equipment blanks from all sampling apparatus at a frequency of ten percent for chemical analysis. Collect equipment blanks at a frequency of one per day if disposable sampling equipment is used. The Permittees shall modify the scope of work to include these QA/QC samples.

21) Section 5.2.3: Collection of Geotechnical Data:

The Permittees shall provide a detailed description of sample collection and preparation methods for laboratory analysis.

22) Figure 10 (Radionuclides Detected in tuff beneath Pit 6 at MDA C):

This figure shows the Phase I RFI borehole locations. The figure is based on 1974 engineering drawings instead of the 2001/2002 geophysical survey results. Because the locations of the pit boundaries have been revised based on the new geophysical data, it is impossible to determine the locations of the borings in relation to the pits and shafts using the outdated figures. The Permittees shall provide an updated map with the borehole locations.

23) Figure 11 (Proposed Boreholes at MDA C):

This figure shows the proposed borehole locations. The figure is based on 1974 engineering drawings instead of the 2001/2002 geophysical survey results. Because the locations of the pit boundaries have been revised based on the new geophysical data, it is impossible to sufficiently determine the exact locations of the borings in relation to the pits and shafts or to assess drilling accessibility and safety issues using the outdated figures. The Permittees shall provide an updated map with the proposed borehole locations.

24) Table 2: Inorganic Chemicals and Radionuclides Detected Above BVs Beneath Pit 6 at MDA C:

(a) The Permittees shall indicate the samples on this table that were analyzed from curated core. The samples from curated core were not analyzed for all constituents and the holding times were exceeded. A footnote shall be added to the bottom of the table.

(b) There is a discrepancy between the tritium value reported in Table 2 for the tuff sample collected from 112-115 feet in borehole 50-09108 and the value for the same sample described in the "Response to NOD: TA-50, Part B, Permit Application, Rev.2.0". The value in Table 2 is reported as 1,660 pCi/mL; however, the permit application notes that the tritium concentration for this sample was 1,660,000 pCi/g, which was the maximum tritium concentration measured at site. The Permittees shall

correct the incorrect document. NMED requests voluntary submittal of the corrected data.

25) Table 3: Summary of Revised Borehole Sampling:

The Permittees shall include field screening for VOCs and tritium on this table.

26) Appendix B: Historical Investigation Report:

Sections B-2.0, B-3.0, and B-4.0 of the Historical Investigation Report are poorly organized and repetitive. The Permittees shall combine the text in these 3 sections and the text in Appendix D to provide efficient summaries of the activities, results, and data interpretation for each type of historical investigation that was conducted. For example, the work plan describes the subsurface investigation in one section, reviews the data from the investigation in another section, interprets the data in another section, and analyzes the data in a separate appendix. Combining all of the information about each type of investigation into one comprehensive and complete section will make the document easier to read and understand.

27) Section B-1.1.1: MDA C Disposal Pit Inventory:

The RFI Work Plan for OU 1147 notes that mercury was disposed in Pit 5, but it is not listed as a constituent in the description of Pit 5 in this section. The Permittees shall correct this section.

28) Section B-1.2.2: Surface Radiation Surveys and Sampling (1979-1986):

The Permittees shall include the data from Table 2-14 of the RFI Work Plan for OU 1147 to use with Figure B-1.

29) Section B-1.2.3: Perimeter Pore-Gas Sampling (1989):

The sample locations are not numbered in this section or on the corresponding map, Figure B-2. The information on detected contaminants cannot be used, because it is not noted which sample location each detection corresponds to, or even the general area(s) where detections were measured. The Permittees shall provide sample location identifications and analytical data on a revised map.

30) Section B-2.1.1: Surface Soil and Fill Sampling:

(a) This section states that 203 soil samples were collected and their locations are shown on Figure B-3. However, the statement has no value, because Figure B-3 does not number the sample locations. Refer to the comment for Figure B-3 (comment number 44) below.

(b) This section also states that 59 of the samples were analyzed for tritium, but the data were not used; however, it does not state why the data were not used. Table E-9 only states that the data were rejected by the laboratory. Modify this section to include the explanation found in B-3.2.1 regarding rejection of data.

31) Section B-2.1.3: Biota Screening and Sampling:

The Permittees shall include a reference to Tables B-7 and B-8 for the results of biota screening.

32) Section B-2.3: Subsurface Investigations: Phase I RFI Core Sampling:

(a) This section states that “field-screening results were not used to select samples because gross alpha, beta, or gamma activity in the core did not exceed local background levels.” However, as an example, the borehole log for 50-09107 records a field tritium screening level of 49,964 pCi/L at 55 feet. While field screening may not have been used to select samples, this sample appears to greatly exceed local background levels. The Permittees shall describe how the background levels for each type of activity were derived.

(b) This section also notes that core samples were field tested for HE and VOCs. These results are not noted on the borehole logs nor are they included in the data submitted with the work plan. The Permittees shall provide all available screening and analytical data.

(c) The last paragraph of this subsection describes moisture encountered in two boreholes. Revise the paragraph to include mention of the wet tuff encountered in borehole 50-09100 from 71.5 to 73.5 feet.

33) Section B-3.1.1: Biota Sampling:

Correct the fourth sentence to read, “Biota sampling data will be reported in the MDA C *Investigation Report*.”

34) Section B-3.1.2: Geophysical Survey Results:

The figures in this work plan are based on 1974 engineering drawings instead of the 2001/2002 geophysical survey results. There is a 40-ft discrepancy between the reported [2001/2002] boundaries and the historical data. Because the locations of the pit boundaries have been revised based on this new information, it is impossible to assess drilling accessibility and safety issues, including previous and proposed borehole and sampling locations, using the outdated figures. The Permittees shall update and submit revised maps with borehole locations.

35) Section B-3.2.1: Phase I RFI Surface Soil and Fill Samples:

The first paragraph claims that all data are suitable for data assessment. The Permittees shall delete this statement. It is not accurate. As an example, the Radionuclide Comparison with BVs and Fallout Values section of this work plan describes the rejection of the tritium data.

36) Section B-3.2.1: Phase I RFI Surface Soil and Fill Samples: Evaluation of Organic Chemicals:

(a) This work plan does not propose any additional surface soil sampling above Pit 6. The executive summary states “limited evidence indicates that Aroclor-1260 and bis (-ethylhexyl) phthalate may be elevated locally in the surface soil and fill above Pit 6.” However, because there are no location numbers on Figure 3 to correspond to the data in

Table B-14, it cannot be determined where the measured detections occurred. The bubble plots of the organic data on Figures D-6, D-7, and D-8 show approximately where the detections were measured. The diagrams are acceptable only as visual aids to complement data tables.

(b) At least one PCB detection was measured above its SAL. The Permittees shall include appropriate SALs on a revised table of data.

(c) NMED requires data to determine whether there is a data gap here and whether additional surface sampling for PCBs, pesticides, or SVOCs is needed.

(d) The Permittees shall modify the scope of work to propose plans for surface sampling at this location, or provide sufficient data and rationale to demonstrate that additional sample collection is not necessary.

37) Section B-3.2.3: Pore Gas Samples: VOCs in Soil-Gas Survey Samples:

The Permittees shall include locations with the data in Table B-21. The bubble diagram (Figure D-27) shows only the highest concentrations of PCE. The diagram is acceptable only as a visual aid to complement a data table.

38) Section B-3.2.3: Pore Gas Samples: VOCs in Pore-Gas Samples:

(a) The second paragraph of this section states that the bottom of borehole 50-10131 is at 250 feet. However, Table E-7 indicates that samples were collected from the borehole at 315 feet. The Permittees shall correct this section.

(b) The last paragraph of this subsection states that B&K screening may not be useful for predicting low pore-gas concentrations. However, Section 5.0 cites ER-SOP-6.31, Rev. 1 "Atmospheric and Sub-Atmospheric Air Sampling" as the methods that will be followed in this investigation. The cited SOP describes screening methods using the B&K instrument. This is an example of the reason why NMED requires field screening methods to be described in this work plan. The B&K limits VOC detections to three or four selected compounds. This limitation is not acceptable in this application.

(c) The Permittees shall provide a description of the methods of field screening for VOCs, and the purpose of conducting field screening (for example, extending boreholes if contamination is encountered at the bottom interval). VOCs have been detected at the bottom interval of both pore-gas monitoring boreholes.

(d) This section states, "the aliphatic hydrocarbons, benzene, carbon tetrachloride, chloroform, PCE, and TCE are identified as COPCs at MDA C." A screening instrument must be used that is capable of detecting all VOCs that are potentially present at MDA C.

39) Section B-4.1: Nature and Extent of Contamination in Surface Soil and Fill: Radionuclides:

The highest concentrations of Am-241, Pu-238, and Pu-239/240 were found in surface samples in the NE corner of the site. No surface sampling is proposed for this portion of

the site. The Permittees shall modify the scope of work to propose plans for surface sampling at this location, or provide sufficient data and rationale to demonstrate that additional sample collection is not necessary.

40) Section B-4.2.1: Data Gaps Related to Surface Soil and Fill:

This section claims that the detected concentrations of organic chemicals are bounded by other soil and fill samples where they were not detected. However, the data provided in this work plan is not sufficient to demonstrate this assertion. The bubble plots do not adequately show or prove the validity of this statement. The Permittees shall provide sufficient data and rationale to demonstrate that additional sample collection is not necessary.

41) Figures and Tables in the Historical Investigation Report:

Some of the historical data is not usable. NMED requires the background information and data to determine the amount of further data collection that is needed to complete the investigation of the site. Tables that include data and sample identification numbers but no corresponding figure with the identification numbers do not serve this purpose. The Permittees shall present the detections of contaminants encountered during previous investigations in table format, with accompanying figures showing identifiable sample locations.

42) Tables in the Historical Investigation Report:

(a) The Permittees shall include tables with summaries of regulatory criteria and applicable cleanup or screening levels. This information may be included on the tables of analytical data or as separate tables.

(b) The Permittees shall include tables with summaries of historical field screening and field parameter measurements of soil, tuff, and air quality data.

43) Figure B-2: Pre-RFI characterization sample locations-1989

The Permittees shall include sample ID numbers at the sample locations marked on the figure, or the locations where the detections were measured (as described in Section B-1.2.3).

44) Figure B-3: Phase I RFI surface sample locations at MDA C-1995

The Permittees shall include sample ID numbers at the sample locations marked on the figure. These must correlate with the ID numbers and data in Tables B-10, B-12, and B-14.

45) Figure B-4: Locations of tritium probe and biota samples collected in 2003 at MDA C:

The Permittees shall include sample ID numbers for the biota screening samples at the sample locations marked on the figure. The screening location ID numbers in Tables B-7 and B-8 do not match those on Figure B-4. The sampling results are not available and should be included in the Investigation Report. The report must include a figure with the locations where biota samples were actually collected. This work plan states that 14 ant

mounds and 63 burrows were screened, but only 9 ant mounds and 20 burrows were sampled.

46) Figure B-7: Overlay of 2001/2002 geophysical surveys versus 1974 LASL engineering drawing to identify pit and shaft locations:

(a) The locations of the boundaries are not revised for the Chemical Pit and Pit 6 on this figure. It appears from Figure B-6 that the 2001 Geophysical Survey encompassed the entire MDA C site. The Permittees shall include revised boundaries on Figure B-7 for the western portion of the site.

(b) All figures in this work plan must be based on the revised pit boundary locations as determined by the geophysical survey results.

47) Table B-2: Summary of Work Plan Specifications, Actual Fieldwork, and Rationale for Deviations:

(a) NMED notes that the table does not include the fact that the RFI Work Plan for OU 1147 states that borehole depths will be determined by the depths of contaminant plumes. The plan further states that the boreholes will be advanced to two 5-ft sample intervals below detection (by field laboratory analysis) of contaminants. According to the borehole logs in appendix C, the MRAL (Mobile Radiological Analysis Laboratory) detected tritium at the bottom interval of several of the boreholes drilled. However, the borings were not advanced past these detections. NMED requires that, for this current work plan, borings shall be advanced 25 feet below the deepest detection of contamination, as determined by field screening or previous investigations, whichever is deeper.

(b) NMED notes that LANL proposed to modify the sampling interval in subsurface tuff to 20-foot intervals, but the EPA maintained the 10-foot sampling interval requirement. NMED requires that, for this current work plan, samples must be collected every 10 feet.

48) Table B-6: Summary of Phase I RFI Subsurface Tuff Samples Collected at MDA C:

Add the "b" footnote to sample 0550-96-0104 (the sample collected from borehole 50-09103 at 46.5 feet).

49) Table B-21: Detected Organic Chemicals in EMFLUX Samples at MDA C:

The Permittees shall revise this table to include data and sample locations. Location IDs must also be noted on Figure D-27, and there must be correlation between this table and Figure D-27.

50) Appendices:

The Permittees shall provide an Investigation-Derived Waste Management Plan as an appendix.

51) Appendix C: Borehole Logs:

(a) The Permittees shall provide a log for borehole 50-10131. NMED notes that the borehole is adjacent to borehole 50-09108, but was advanced to a greater depth (315 feet total depth in 50-10131 versus 120 feet total depth in 50-09108).

52) Appendix D: Statistical Analysis of Chemical Analytical Data from Material Disposal Area C:

The Permittees shall incorporate the information in this appendix into Appendix B. Refer to the comment for the Historical Investigation Report (Comment Number 26).

53) Section D-3.2.1: Inorganic Chemicals:

The fifth paragraph states that cyanide and mercury data will be reviewed later in this section. However, these two constituents are not discussed again in this section. The Permittees shall provide a discussion of the cyanide and mercury data.

54) Figures D-25 and D-26: Pore-Gas data for tetrachloroethene and trichloroethene in borehole 50-10131:

The Permittees shall revise these figures to show the results from the samples collected from 315 feet in borehole 50-10131. PCE and TCE, as well as other constituents, were detected at 315 feet.

55) Figures D-30 and D-31: Correlation plots for B&K and Summa data for trichloroethene and tetrachloroethene in borehole 50-09100:

The information on these figures is not comparable without conversion calculations, because the two graph axes are reported in different units. The laboratory analytical data is reported in ppmv or ppbv, and the B&K data is reported in ppm. The Permittees shall submit revised figures and data using the same units.

56) Table D-4: Summary Table for Detected VOCs in Pore Gas:

Table D-4 is not usable, because it only lists the analytes and concentrations of VOCs detected. The Permittees shall submit a revised table with borehole location and depth information. The data is included on Table E-7. NMED requires data regarding the depths of contamination of all constituents.

57) Appendix E: Phase I RFI Data (CD):

The appendix is comprised of 537 pages of data tables. There are 9 tables, E-1 through E-9. The Permittees shall add a table of contents to this appendix for ease of use and reference.

58) Appendix F: Regulatory History and Documents:

The Permittees shall delete this appendix. It is unnecessary for this work plan.

59) Appendix G: Ecological Scoping Checklist and 2002 Surface Water Assessment:

The Permittees shall delete this appendix. This information shall be provided in the Investigation Report for MDA C.

60) Appendix H: Quality Assurance/Quality Control Process:

The Permittees shall delete this appendix. The text shall be incorporated into Section B-4.0, Data Interpretation. Table H-1 is identical to Table E-9 on the enclosed CD.

61) Appendix I: Section I-1.0: Environmental Setting:

The Permittees shall delete this section and the associated tables (I-1 and I-2). This information shall be provided in the Investigation Report for MDA C.

62) Appendix I: Section I-2.0: Stratigraphy:

The Permittees shall delete this section and the associated figures (I-1 and I-2). Brief descriptions of the stratigraphic units beneath MDA C shall be provided in Section 3.2.1. Figure I-1 is identical to Figure 7 of the main section of the work plan. Figure I-2 is identical to Figure 6 of the main section of the work plan.

63) Appendix I: Section I-3.0: Geochemistry at MDA C:

The Permittees shall delete this section. Move this information to Section 3.2, Subsurface Conditions.