

**Response to the “Notice of Disapproval for the
Investigation Report for Middle Los Alamos Canyon Aggregate Area,
Los Alamos National Laboratory EPA ID No: NM0890010515, HWB-LANL-08-002,”
Dated April 4, 2008**

INTRODUCTION

To facilitate review of this response, the New Mexico Environment Department’s (NMED’s) comments are included verbatim. The comments are divided into general and specific categories, as presented in the notice of disapproval. Los Alamos National Laboratory’s (LANL’s or the Laboratory’s) responses follow each NMED comment. This response contains data on radioactive materials, including source, special nuclear, and byproduct material. Information on radioactive materials and radionuclides, including the results of sampling and analysis of radioactive constituents, is voluntarily provided to NMED in accordance with U.S. Department of Energy (DOE) policy.

GENERAL COMMENTS

NMED Comment

1. *The Permittees conducted a human health risk screening assessment for all sites included in the Middle Los Alamos Aggregate Area Investigation Work Plan (Plan). However, different risk scenarios (e.g., industrial, construction worker) were used for each of the solid waste management units (SWMUs), areas of concern (AOCs), and Consolidated Units (CUs). For example, industrial soil screening levels (SSLs) were used for comparison and to evaluate risk at SWMU 02-004(a) and construction worker SSLs were used for the risk screening at CU 21-006(e)-99. In each section of the Report where human health risk screening is addressed, the Permittees must also include an explanation of how and why the risk scenario was chosen.*

LANL Response

1. The industrial scenario was used at Technical Area 02 (TA-02) and TA-26 because it is the current and reasonably foreseeable land use as stated in the approved investigation work plan. Both TA-02 and TA-26 are under DOE/Laboratory control and are planned to remain so for the reasonably foreseeable future. No construction activities are planned for these technical areas.

Although the industrial scenario is also the current and reasonably foreseeable land use for TA-21, the construction worker scenario was used for the preliminary risk screening because anticipated future activities at TA-21 include decontamination and decommissioning (D&D). The construction worker scenario is generally more protective and applicable for this type of activity, which may include excavation and exposure to subsurface soil. The construction worker scenario was used to determine if controls are necessary to protect workers during D&D activities.

The text in section 1.4.2, as well as all sections referring to the risk scenario used for individual sites (Summary of Human Health Risk Screening), has been revised to clarify the rationale for selection of the risk screening scenarios.

SPECIFIC COMMENTS

NMED Comment

1. Section 1.3.2, Geophysical Survey, page 3, paragraph 3:

Permittees' Statement: "Geophysical results indicated that the remaining portion of the liquid acid waste line terminated approximately 200 ft west of its eastern endpoint (Plate I)."

The Permittees must clarify whether or not the remaining portion of the acid waste line identified during the geophysical survey was removed. If the line was left in place, the Permittees must remove the remaining portions of the line. Following the removal, the Permittees must obtain confirmatory samples from two depths; 0–0.5 ft and 1.0–2.0 ft beneath the former line. At a minimum, samples must be collected at 50 foot intervals, at areas of visible staining, and at the locations of all pipe connections. The Permittees must submit samples to a laboratory for analysis of the same analytical suite completed for AOC 02-004(f).

LANL Response

1. The text in section 1.3.2 has been revised to clarify whether the remaining portion of the acid waste line identified during the geophysical survey was removed. A portion of the acid waste line associated with Area of Concern (AOC) 02-004(f) (approximately 200 ft running east-west) remains in place. All portions of the acid waste line remaining at AOC 02-004(f) will be removed and disposed of, and samples will be collected. Text has been added to section 6.0 (Recommendations), indicating that the line will be removed and samples will be collected. Details of the removal and samples collected will be presented in the Phase II investigation work plan.

NMED Comment

2. Section 1.3.4, Field Screening, page 3, paragraph 1:

Permittees' Statement: "The action level for organic vapor field screening was 10 ppm. If field screening of the deepest planned sample at a location detected organic vapors in head space at or above 10 ppm greater than the ambient air reading, additional samples were collected at greater depths."

The Permittees must provide the rationale for the 10 ppm threshold was chosen as the basis for determining the extent of organic constituents.

LANL Response

2. The text in section 1.3.4 has been revised to clarify the basis for the 10-ppm screening threshold. The 10-ppm threshold for field screening was selected based on field experience with organic vapor screening by using photoionization detectors (PIDs). The nature and extent of contamination were determined using analytical results from samples analyzed at off-site contract laboratories and are subject to full quality control standards. Experience has shown that when obtaining PID readings for ambient air, it is common to record variability with brief spikes of 5–10 ppm above the sustained ambient air concentration. The 10-ppm threshold was selected to avoid false positive readings that would be common if a lower threshold were used for field screening. As stated in section 1.3.4 of the report, "The action level for organic vapor field screening was 10 ppm. If field screening of the

deepest planned sample at a location detected organic vapors in head space at or above 10 ppm greater than the ambient air reading, additional samples were collected at greater depths.”

NMED Comment

3. Section 1.4.2, Cleanup Standards, page 5, paragraph 1:

Permittees' Statement: “The current land use is industrial, and screening assessments will compare COPC concentrations for each site with industrial SSLs.”

The Permittees must explain why they have used industrial SSLs to compare contaminants of potential concern (COPC) concentrations for the screening assessments for sites in Middle Los Alamos Canyon Aggregate Area (MLACAA), particularly at Technical Area (TA) 2 where all structures at TA-2 has been removed. As the Permittees are aware, if the individual SWMUs and AOCs do not achieve risk under a residential scenario, a corrective action complete without controls cannot be granted and such sites must maintain controls (e.g., engineered, institutional). Also see General Comment #1.

LANL Response

3. See response to General Comment 1. Section 1.4.2 has been revised to explain the choice of industrial soil screening levels for TA-02 sites.

The Laboratory is aware that corrective action complete without controls cannot be granted unless the site satisfies risk under a residential scenario. All sites will be evaluated under the residential scenario in the Phase II investigation report per Compliance Order on Consent requirements. If sites pass risk under this scenario, they will be recommended for corrective action complete without controls in the report. Because the intent of the preliminary risk screening was to determine whether corrective action or controls on activities are necessary to protect receptors under current and reasonably foreseeable future land use, the residential scenario was not evaluated.

NMED Comment

4. Section 2.2.5.2, Soil and Rock Sample Field-Screening Results:

Permittees' Statement: “No organic vapors were detected more than 10 ppm above ambient air during headspace (PID) screening of samples at AOC 02-003(a).”

See Specific Comment #2.

LANL Response

4. See response to Specific Comment #2.

NMED Comment

5. Section 2.6.6, Summary of Human Health Risk Screening, page 24:

Permittees' Statement: “A preliminary screening assessment using an industrial scenario was conducted to determine whether remediation may be necessary at AOC 02-003(e). The screening assessment results did not indicate that any area requires remediation.”

The Permittees have stated that AOC 02-003(e) requires additional sampling to define the lateral and vertical extent of contamination. However, spot removal is necessary at this site. According to Table F-2.5-3 Summary of Radionuclides Detected or Detected Above BV/FV at AOC 02-003(e), cesium-137 concentrations were greater than the industrial screening action level (SAL) at three locations (02-600206, 02-600207, and 02-600208) at depths ranging from 4.5 feet to 8.1 feet. Therefore, in addition to proposed sampling, the Phase II Work Plan should include proposed removal activities for the areas of elevated cesium-137.

LANL Response

5. The Laboratory is aware of the residual concentrations of cesium-137 above the industrial screening action level at AOC 02-003(e). However, under an industrial scenario there is no exposure to the cesium-137 concentrations given the depths of 4.5 ft below ground surface or greater (the industrial scenario is assumed to be a surface exposure with no subsurface intrusion). Because there is no exposure to the cesium-137 contamination, there is no potential unacceptable risk/dose at AOC 02-003(e). In addition, the site will remain industrial and under DOE/Laboratory control for the foreseeable future. Therefore, remediation of the subsurface cesium-137 at AOC 02-003(e) was not recommended in the investigation report. However, further evaluation and discussion about whether remediation of the cesium-137 contamination at AOC 02-003(e) should occur will be made in consultation with DOE-Los Alamos Site Office when the lateral and vertical extent of contamination have been defined. Final site recommendations or activities will be provided in the Phase II investigation report.

NMED Comment

6. Section 3.2.5.4, Nature and Extent of Soil and Rock Contamination, page 103:

Permittees' Statement: "Vertical extent is defined for cyanide (total), perchlorate, explosive compounds, dioxin/furan congeners, and radionuclides (americium-241, cesium-134, and cesium-137)."

The Permittees state that the vertical extent is defined for perchlorate. However, no perchlorate data is provided in Table F-3.1-1, Summary of Inorganic Chemicals Above BV at Consolidated Unit 21-006(e)-99. According to Section 4.2.2 of the approved Plan, perchlorate analysis was required for samples obtained at CU 21-006(e)-99. The Permittees must revise Table F-3.1-1 to include the perchlorate data for CU 21-006(e)-99.

Additionally, there are two places in Table F-3.1-1, under the 'Cyanide (total)' heading for sample ID RE21-07-6484 and under the 'Cyanide (total)' heading for sample ID RE21-07-6487, that are blank. The Permittees must revise Table F-3.1-1 to reflect the appropriate identifier (i.e., na = not available, analyte not above BV) for the two aforementioned sample IDs.

LANL Response

6. Perchlorate was analyzed as required by the approved work plan (see Table 1.3-2) but was not detected in any samples at Consolidated Unit 21-006(e)-99. As a result, perchlorate is not included in Table F-3.1-1, which includes only inorganic chemical results greater than background values. No revision of Table F-3.1-1 is necessary.

The cyanide results for samples RE21-07-6484 and RE21-07-6487 were rejected because the associated spike sample recovery was less than 30%, as discussed in Appendix D, section D-3.2. Both cyanide results were initially qualified as nondetects. Table F-3.1-1 has been revised by inserting “—” in the blank cells and footnoted accordingly: ^e — = Analyte not reported (detect or nondetect) above BV or not detected.

NMED Comment

7. Section 4.6.4, Nature and Extent of Soil and Rock Contamination, page 113:

Permittees' Statement: *“Vertical extent is defined for explosive compounds, SVOCs, and strontium-90 (Appendix F).”*

The Permittees state that vertical extent is defined for explosive compounds. However, Table F-4.1-2 does not present any analytical data for explosive compounds. The Permittees must revise Table F-4.1-2 to include the explosive compound analyses.

LANL Response

7. Table F-4.1-2 includes only those organic chemicals that were detected. No explosive compounds were detected in any samples from TA-26, resulting in the conclusion that nature and extent are defined. No revision to Table F-4.1-2 is necessary. Note that the title of Table F-4.1-2 was incorrectly presented as “Summary of Inorganic Chemicals above BV at TA-26” and has been corrected to read “Summary of Organic Chemicals Detected at TA-26.”

NMED Comment

8. Section 6.0, Recommendations, page 116, paragraph 2:

Permittees' Statement: *“At TA-21, additional sampling and remediation should be planned in coordination with the DP Site Aggregate Area investigation as appropriate. Data obtained during the additional investigation activities should be sufficient to define the extent of contamination and perform risk-screening assessments for the two sites. If practicable, the additional investigation activities at the TA-21 sites should be performed as part of the DP Site Aggregate Area investigation and reported as part of that investigation.”*

Although the two sites at TA-21 (AOC 21-028(c) and CU 21-006(e)-99) are physically located within the DP Site Aggregate Area, the investigation activities proposed at these two sites were included in the approved Investigation Work Plan for Middle Los Alamos Canyon Aggregate Area at the request of the Permittees. Therefore, Phase II investigation/remediation activities at these two sites must be included in the Phase II Investigation Work Plan for MLACAA.

LANL Response

8. Proposed Phase II activities for AOC 21-028(c) and Consolidated Unit 21-006(e)-99 will be included in the Phase II investigation work plan and reported in the subsequent Phase II investigation report. The text in paragraph 3 of section 6.0 has been revised accordingly.

NMED Comment

9. Section 7.0, Schedule for Recommended Activities, page 116:

Permittees' Statement: "A revised or Phase II investigation work plan will be developed and submitted to NMED within 6 months of approval of this investigation report. The work plan will provide details and a schedule for the implementation of remediation and sampling activities and submittal of a Phase II investigation report."

NMED concurs with the Permittees' conclusion that additional sampling and remediation activities are necessary at TA-2, TA-21, and TA-26. NMED reiterates that a Phase II Investigation Work Plan must be submitted to NMED within six months of approval of the Report. The submittal date for the Phase II Investigation Work Plan will be provided in the approval letter for the Report.

LANL Response

9. NMED's concurrence is noted. Upon NMED's approval of the comment responses and revised report, the Laboratory will prepare the Phase II Investigation Work Plan for delivery to NMED on or before the date provided by NMED in the approval letter for the report, understood to be 6 mo after the date of approval.

NMED Comment

10. Table 1.3-2, Samples Collected and Analyses Requested, pages 151-193:

The Permittees must revise Table 1.3-2 to identify the analytical method (e.g., 8260 for VOCs) used for analyses of the constituents listed in this Table.

LANL Response

10. Table 1.3-2 is in the format provided in recent investigation reports. Analytical methods used are summarized in Appendix D, Table D-1.0-1, which is consistent with previous reports. In addition, analytical methods used are listed for each specific sample analytical result in tables provided on the data DVD (Appendix E). A footnote has been added to Table 1.3-2 that refers to Appendix D and the data DVD in Appendix E for the analytical methods used.

NMED Comment

11. Appendix B, Section B-8.1, Deviations from Work Plan, Sample Collection, page B-5, bullet 2:

Permittees' Statement: "All sampling depths required by the investigation work plan were not collected due to the hand auger refusal at locations inaccessible to a drill rig, or due to drill rig refusal. The HSA rig met refusal at 95 locations, and hand augering met refusal at 60 locations."

The Permittees must provide a table in the revised Report that identifies which sample locations encountered refusal. The table must include the sample ID, the work plan location (e.g., BH5-2), the proposed sample depth, and the associated SWMU or AOC number.

LANL Response

11. The requested table has been added to Appendix B as Table B-8.1-1. Because sample identifications (IDs) are assigned only to samples actually collected, the table does not include sample IDs but does include the location IDs, work plan locations, proposed sampling depths, and the solid waste management unit, AOC, or consolidated unit number.

The number of locations where refusal was encountered was incorrectly stated in Appendix B. The total number of locations where refusal was encountered is 97: 79 locations by hand augering and 18 locations by hollow-stem auger drilling. The text in the second bullet of section B-8.1 has been revised to include the correct number of locations where refusal was encountered.

Crosswalk between NMED Comments and Revisions to Investigation Report

NMED Comment	Report Section Revised	Nature of Revision
Changes called for by notice of disapproval (NOD) comments:		
General Comment #1	Section 1.4.2 and all sections entitled "Summary of Human Health Risk Screening"	Revised text to explain how and why scenarios were chosen for the preliminary risk screening assessments for each site
Specific Comment #1	Section 1.3.2	Revised text to clarify that portions of the liquid acid waste line remain in place
	Section 1.4.2	Revised text to clarify rationale for selection of risk screening scenarios
	Section 6.0	Added text stating that the remaining portions of the liquid acid waste line within Technical Area 02 (TA-02) will be removed and samples will be collected beneath former line
Specific Comment #2	Section 1.3.4	Added text explaining rationale for 10-ppm threshold used in field screening for organic vapors
Specific Comment #3	Section 1.4.2	Revised text to clarify rationale for selection of industrial soil screening levels for TA-02 sites
Specific Comment #4	Section 1.3.4	Added text explaining rationale for 10-ppm threshold used in field screening for organic vapors
Specific Comment #5	Section 2.6.6	None
Specific Comment #6	Table F-3.1-1	Added "—" for cyanide results in samples RE21-07-6484 and RE21-07-6487
Specific Comment #7	Section 4.6.4	No revisions
Specific Comment #8	Section 6.0	Revised text to indicate that TA-21 activities will be coordinated with Delta Prime site investigation activities, but proposed activities will be included in the Phase II investigation work plan and the results will be included in the Phase II investigation report for Middle Los Alamos Canyon Aggregate Area
Specific Comment #9	Section 7.0	No revisions
Specific Comment #10	Table 1.3-2	Added footnote referring to Appendix D and data DVD in Appendix E for analytical methods used
Specific Comment #11	Appendix B	Added Table B-8.1-1 listing locations (work plan location and location identification) and depths where samples were not collected because of hand auger or hollow-stem auger refusal
Additional revisions not called for by NOD comments:		
Not in NOD	Table F-4.1-2	Corrected table title to read "Summary of Organic Chemicals Detected at TA-26"
Not in NOD	Table F-3.1-1	Added "—" for antimony in sample RE21-07-6503 to correct the blank cell