**Response to the Notice of Disapproval for the
Phase II Investigation Work Plan for Upper Sandia Canyon Aggregate Area,
Los Alamos National Laboratory, EPA ID No. NM0890010515, HWB-LANL-11-026,
Dated August 5, 2011**

INTRODUCTION

To facilitate review of this response, the New Mexico Environment Department's (NMED's) comments are included verbatim. 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 policy.

COMMENTS

NMED Comment

1. ***Section 4.1.3.3, Proposed Sampling at SWMU 03-009(a), page 8:***

   a. *The Investigation Report for Upper Sandia Canyon Aggregate Area, Revision 1 (Report) concluded that the vertical and lateral extent of chromium was not defined at Solid Waste Management Unit (SWMU) 03-009(a). During 2009 investigations, chromium was detected at two locations and concentrations increased with depth at both of these locations. The samples were collected from depths of 4 - 20 ft below ground surface (bgs). The IWP proposes to collect two additional samples by extending the depth at these locations to 30 ft to define the vertical extent of chromium contamination. The IWP also proposes to collect samples from one new sampling location to define the lateral extent. Five samples are proposed to be collected from 0 to 20 ft bgs from the new location, 9a-1. Since chromium concentrations increased with depth at the previously sampled locations, the Permittees must also extend the depth of the boring to 30 ft at the new location to define the vertical extent. Similarly, lead concentrations increased with depth, with the highest concentration detected in the deepest sample at location 03-608178 (19-20 ft bgs). Lead analyses must also be included in the analytical suite for all samples to be collected from the boring location 9a-1.*

   b. *The Permittees propose to collect six samples from the depths of 9 - 20 ft bgs at locations 03-608181 and 03-608182 to define the vertical extent of Aroclor-1260, Semi Volatile Organic Compounds (SVOCs), and Total Petroleum Hydrocarbons-Diesel Range Organics (TPH-DRO). Samples collected during previous investigations at these locations indicated that inorganic chemicals were not present. However, the samples were collected only from 0-1 ft and 1-2 ft bgs and deeper intervals were not sampled. Inorganic chemicals were detected only in samples collected from approximately 11 ft-20 ft bgs at locations 03-608178 and 03-608179 (located north of these locations). To define the extent of contamination, the Permittees must include analyses of inorganic chemicals in the analytical suite proposed for samples to be collected from locations 03-608181 and 03-608182.*

LANL Response

1. a. Table 4.1-6 has been revised to include an additional sampling interval from 29–30 ft below ground surface (bgs) at location 9a-1. All samples to be collected at location 9a-1 will be analyzed for lead, as already indicated in Table 4.1-6.

   b. The text in section 4.1.3.3 and Table 4.1-6 have been revised to include analysis for target analyte list (TAL) metals at locations 03-608181 and 03-608182. Table 4.1-6 was also revised to include a sampling interval of 29–30 ft bgs at these locations to be consistent with proposed sampling intervals at locations 03-22538, 03-608178, 03-608179, 9a-1, and 9a-2.

NMED Comment

2. Section 4.1.9.1, Site Description and Operational History, page 16:

The text states that each of the four sludge beds at SWMUs 03-014 (k,l,m,n) measure 35 ft x 10 ft. Figure 4.1-6 indicates the size of each bed to be much larger, approximately 70 ft x 25 ft. The Permittees must clarify if the dimensions are reported incorrectly or the SWMU boundaries indicated on the figure are incorrect or depict areas larger than the sludge-drying beds.

LANL Response

2. The dimensions of 35 ft by 10 ft included in the description for the four sludge beds, SWMUs 03-014(k,l,m,n), were taken from the SWMU report (LANL 1990, 007511). Based on aerial photographs, the Laboratory has determined the dimensions reported in the SWMU report are erroneous, and the actual dimensions of each of the four beds (including the berms) are approximately 25 ft wide by 70 ft long, as shown in Figure 4.1-6. The text in sections 4.1.9.1, 4.1.10.1, 4.1.11.1, and 4.1.12.1 has been revised accordingly, and the reference to the SWMU report has been removed. No change to Figure 4.1-6 is necessary.

NMED Comment

3. Section 4.1.9.3, Proposed Sampling at SWMU 03-014(k), page 17:

a. The Report concluded that the lateral and vertical extent of cyanide is not defined at SWMUs 03-014 (k,l,m,n). The IWP proposes to collect shallow subsurface samples from sampling location 03-03265 to define the vertical extent of cyanide. To define the lateral extent of cyanide, samples are proposed to be collected from new location 14k-1, which is west of sampling location 03-608272. During previous investigations, cyanide was detected in two of the four samples that were collected along the perimeter of the sludge-drying beds to define the lateral extent. The maximum detected concentration of cyanide (9.48 mg/kg) was in a sample collected from location 03-608273. However, the Permittees did not propose cyanide analysis for samples proposed to be collected from a location north of 03-608273 (i.e., 14k-4) to define the lateral extent of contamination. The Permittees must include cyanide in the analytical suite for samples to be collected from proposed location 14k-4.

b. Lead was detected at 125 mg/kg at sampling location 03-608270 during previous investigations, significantly higher than the background value of 22.3 mg/kg. The Report concluded that the lateral extent of lead was defined since the concentration was lower than the maximum detected concentration of 217 mg/kg from a sample collected at location 03-03202, which is southwest of location 03-608270. However, the Permittees propose to collect samples from a new location

(14k-3) that is east of location 03-03202. Lead analysis must also be included for samples proposed to be collected from location 14k-3 to further define the lateral extent of lead.

c. *The Report concluded that the vertical extent of silver was not defined at location 03-03265. However, the Permittees did not propose analysis of silver for the two samples to be collected from 10-11 ft and 14-15 ft bgs at location 03-03265. The Permittees must define the vertical extent of silver and revise the text and tables accordingly.*

d. *The Report concluded that the extent of tritium was not defined to the east of the sludge-drying beds. However, tritium analyses are not proposed for samples to be collected from the new location 14k-3 that is east of location 03-608270, where the maximum concentration of tritium was detected during previous investigations. Revise the IWP to include tritium analysis for samples to be collected from location 14k-3.*

LANL Response

3. a. The text in section 4.1.9.2 has been revised to indicate the lateral extent of cyanide is not defined to the north of location 03-608273. The text in section 4.1.9.3 and Table 4.1-18 have been revised to include the analysis of cyanide at proposed location 14k-4.

   b. The text in section 4.1.9.3 and Table 4.1-18 have been revised to include the analysis of lead at proposed location 14k-3.

   c. The text in section 4.1.9.2 has been revised to indicate the vertical extent of silver is not defined at location 03-03265. Section 4.1.9.3 and Table 4.1-18 have been revised to include the analysis of silver at location 03-03265.

   d. The text in section 4.1.9.2 has been revised to indicate the lateral extent of tritium is not defined to the east of location 03-608270. Section 4.1.9.3 and Table 4.1-18 have been revised to include the analysis of tritium at proposed location 14k-3.

NMED Comment

4. Section 4.1.13.2, Previous Investigations, page 20:

According to the Report, the vertical extents of both Aroclor-1254 and Aroclor-1260 are not defined at sampling location 03-608279, not Aroclor-1254 only. The concentrations increased with depth for both of these compounds at sampling location 03-608279 at SWMU 03-014(o). In addition, the Report stated that the lateral extent of Arcolor-1254 was not defined to the east, south, and west of the beds. However, PCB analyses are not proposed for samples to be collected from the new location 14o-1 that is located east of the beds. The Permittees must resolve these discrepancies and revise the proposed sampling to add PCB analyses.

LANL Response

4. The text in section 4.1.13.2 has been revised to indicate the vertical extent of Aroclor-1260 is not defined at location 03-608279, and the lateral extent of Aroclor-1254 is not defined to the east of location 03-608277. No changes were made to the proposed analytical suite at location 03-608279 since polychlorinated biphenyls (PCBs) were already included in the text and table. Section 4.1.13.3 and Table 4.1-20 have been revised to include the analysis of PCBs at proposed location 14o-1.

NMED Comment

5. Section 4.1.14.3, Proposed Sampling at SWMU 03-014(u), page 22:

The text indicates that additional samples will not be collected from previous sampling location 03-608287 at SWMU 03-014(u). However, Figure 4.1-6 indicates that location 03-608287 (denoted by a triangle) is a proposed sampling location. NMED concurs with the Permittees that the vertical extent of lead is defined at this location and additional sampling is not required. Revise the figure to depict the proposed sampling locations accurately.

LANL Response

5. The triangle at proposed sampling location 03-608287 has been removed from Figure 4.1-6.

NMED Comment

6. Section 4.1.20.3, Proposed Sampling at SWMU 03-045(b), page 30:

The text indicates that additional samples will not be collected from previous sampling location 03-608197 at SWMU 03-045(b). However, Figure 4.1-4 indicates that location 03-608197 (denoted by a triangle) is a proposed sampling location. Clarify the discrepancy and revise the figure or text accordingly.

LANL Response

6. The triangle at location 03-608197 in Figure 4.1-4 identified an outfall and not a proposed sampling location. However, because the outfall symbol is difficult to distinguish from the symbol for a proposed sampling location, the triangle at location 03-608197 has been removed from Figure 4.1-4.

NMED Comment

7. Section 4.1.25.1, Site Description and Operational History, page 35:

Figure 4.1-9 indicates that the drainage from SWMU 03-045(h) continued northeast before joining a channel north of Eniwetok Drive to ultimately drain into Sandia Canyon, rather than extending south as stated in the text. Analytical data from AOC 03-052(b) (located northeast of the outfall) is used to determine nature and extent of contamination to the north of SWMU 03-045(h). The IWP also states that all data collected as part of the investigation of SWMU 03-045(h) are presented in the 2009 investigation report for Upper Mortandad Canyon Aggregate Area. The Permittees must clarify if contamination from SWMU 03-045(h) migrated to the north and south of the site (to Sandia and Mortandad Canyons, respectively) and whether these potentially contaminated areas were investigated separately. Revise the text accordingly.

LANL Response

7. The text in section 4.1.25.1 has been revised to indicate the northward flow of the cooling tower discharge into Sandia Canyon is being addressed in this Phase II investigation, and the southward flow of the cooling tower discharge is being investigated separately as part of the Phase II investigation for the Upper Mortandad Canyon Aggregate Area (LANL 2010, 111472, pp. 9–10).

NMED Comment

8. Section 4.1.25.2, Previous Investigations, page 36:

The Permittees state that based on the sampling results presented in the investigation report, the lateral and vertical extent of all inorganic chemicals, organic chemicals, and radionuclides are defined at SWMU 03-045(h), except for the vertical extent of barium and cobalt at location MO-604952. However, the 2010 investigation report (p 280) concluded that the vertical extent of some metals (aluminum, barium, calcium, chromium, cobalt, copper, and nickel) is not defined. Resolve the discrepancy and revise the analytical suite for samples proposed to be collected at location MO-604952 accordingly.

LANL Response

8. The text in section 4.1.25.2 has been revised to indicate the vertical extent of inorganic chemicals is not defined at location MO-604952. The text in section 4.1.25.3 has been revised to indicate the samples collected at location MO-604952 will be analyzed for TAL metals.

NMED Comment

9. Section 4.1.28.2, Previous Investigations, pages 39-40:

Permittees Statement: Because concentrations of benzo(b)fluoranthene, fluoranthene, and indeno(1,2,3-cd)pyrene were not detected at upgradient locations, the detected concentrations are most likely the result of runoff from surrounding parking lots and not from AOC 03-052(b). Therefore, the lateral extent of benzo(b)fluoranthene, fluoranthene, and indeno(1,2,3-cd)pyrene is defined.

Review of the data indicates that benzo(b)fluoranthene, fluoranthene, and indeno(1,2,3-cd)pyrene were detected in samples collected upgradient of locations 03-608330 and 03-608331. The Report also concluded that lateral extent of benzo(b)fluoranthene, fluoranthene, and indeno(1,2,3-cd)pyrene was not defined. The maximum concentration of benzo(b)fluoranthene at the site was detected at an upgradient location (03-03291). Similarly, fluoranthene, and indeno(1,2,3-cd)pyrene were also detected in samples collected at locations upgradient of locations 03-608330 and 03-608331. However, the low detected concentrations indicate that additional samples are not necessary at this time. Correct the statement to reflect the accurate characterization of the site.

LANL Response

9. The sentence in section 4.1.28.2 stating benzo(b)fluoranthene, fluoranthene, and indeno(1,2,3-cd)pyrene were not detected at upgradient locations is not accurate. The first part of this sentence has been removed from the text. As indicated in NMED's comment, no additional samples are necessary at this time.

NMED Comment

10. Section 4.1.34.2, Previous Investigations, page 47:

Review of the Report indicates that the vertical extent of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, chrysene, fluoranthene, and indeno(1,2,3-cd)pyrene is not defined at locations 03-608386 and 03-608377. However, the text states that the extent of these

compounds is not defined only at location 03-608386. Table 4.1-59 also indicates that samples collected from both locations would be analyzed for SVOCs. Revise the text to resolve discrepancy.

LANL Response

10. Section 4.1.34.2 has been revised to indicate the vertical extent of benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; chrysene; fluoranthene; and indeno(1,2,3-cd)pyrene is not defined at locations 03-608386 and 03-608377.

NMED Comment

11. Section 4.2.4.3, Proposed Sampling at SWMU 60-007(a), page 53:

The Report concluded that the vertical extent of antimony, Total Petroleum Hydrocarbon (TPH)-Diesel Range Organics (DRO), and TPH-Lubrication Range Organics (LRO) was not defined at SWMU 60-007(a). The IWP proposes to collect samples from four locations (60-10001, 60-10004, 60-10005 and, 60-10006) and analyze them only for TPH-DRO. Review of the data indicates that vertical extent of heavier than diesel range hydrocarbons was not defined at locations 60-10001, 60-10005 and, 60-10006. During 2001 investigations, only surface samples (0.0 - 1.0 ft) were collected from these locations. The Permittees must revise the IWP to include analysis of TPH-DRO extended (using EPA method 8015M) for samples proposed to be collected from locations 60-10001, 60-10004, 60-10005 and, 60-10006.

LANL Response

11. The analytical method listed in Table 5.8-1 for total petroleum hydrocarbon–diesel range organics (TPH-DRO) has been revised to indicate U.S. Environmental Protection Agency (EPA) Method 8015M. All samples submitted for TPH-DRO will be analyzed using EPA Method 8015M.

NMED Comment

12. Section 5.3, Surface and Shallow Subsurface Sampling, pages 56-57:

The Permittees must provide a written description that contains sufficient detail of methods to be used to collect surface and subsurface samples to allow for evaluation of the adequacy of the proposed methods. This includes providing a detailed description of the methods used to collect samples for volatile organic samples (VOCs) analyses. The methods employed must minimize the loss of VOCs during sample collection and produce defensible data. Revise the text and Table 5.0-1 accordingly.

LANL Response

12. As with previous investigation work plans prepared under the Compliance Order on Consent, summary descriptions of investigation methods are provided in the text of the work plan and detailed descriptions are provided in referenced standard operating procedures (SOPs). As noted in sections 5.3.1 and 5.3.2, surface and shallow subsurface samples will be collected using spade-and-scoop or hand-auger methods. These methods are described in SOP-06-09 and SOP-06-10, respectively. These SOPs, which are available at the web site identified in section 5.0 (http://www.lanl.gov/environment/all/qa/adep.shtml), describe how samples are collected to minimize loss of volatile organic compounds. No revisions to the text and table are necessary.

REFERENCES

LANL (Los Alamos National Laboratory), November 1990. "Solid Waste Management Units Report," Vol. I of IV (TA-0 through TA-9), Los Alamos National Laboratory document LA-UR-90-3400, Los Alamos, New Mexico. (LANL 1990, 007511)

LANL (Los Alamos National Laboratory), December 2010. "Phase II Investigation Work Plan for Upper Mortandad Canyon Aggregate Area," Los Alamos National Laboratory document LA-UR-10-7423, Los Alamos, New Mexico. (LANL 2010, 111472)