ERID-111517 EP2011-5007

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Name:	U1100017
Title:	Notice of Disapproval Investigation Work Plan Starmer Upper Pajarito Canyon Aggregate Area LANL EPA ID NM089010515 HWB-LANL-10-077
Date Received:	1/10/2011
Addressee Name:	M. Graham, ADEP
Originator:	J. Bearzi, NMED
Action Item Description:	
Action Due Date:	1/21/2011
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RAJ SOLOMON, P.E.
Acting Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

January 5, 2011

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RE: NOTICE OF DISAPPROVAL
INVESTIGATION WORK PLAN
STARMER/UPPER PAJARITO CANYON AGGREGATE AREA
LOS ALAMOS NATIONAL LABORATORY
EPA ID #NM0890010515
HWB-LANL-10-077

Dear Messrs. Rael and Graham:

The New Mexico Environment Department (NMED) has received the United States Department of Energy (DOE) and the Los Alamos National Security L.L.C.'s (LANS) (collectively, the Permittees) *Investigation Work Plan for Starmer/Upper Pajarito Canyon Aggregate Area* (Work Plan), dated September 2010 and referenced by LA-UR-10-6030/EP2010-0372. NMED has reviewed the Work Plan and hereby issues this Notice of Disapproval (NOD).

General Comments:

1. **Solid Waste Management Units (SWMUs), Areas of Concern (AOCs), and Consolidated Units (CUs) Where 20 Percent of the Soil Samples are Proposed for Polychlorinated Biphenyl (PCB) Analyses:**

NMED Comment: In the case where 20 percent of the samples will be analyzed for PCBs, it is not clear how the Permittees will determine which samples will be analyzed. The Permittees must state the proposed criteria for selecting the sample intervals selected for analyses of PCBs (e.g., only surface samples will be selected; only sample intervals found to contain semi volatile organic compounds (SVOCs)). Revise the document accordingly.

2. **PCB sampling and TA-08:**

NMED Comment: The Permittees propose sampling select locations for PCBs at the SWMUs, AOCs, and CUs located within TA-08. The Permittees indicate in Section 2.2.1 (TA-08), page 3, that transformer stations were constructed; specific locations are not provided. The Permittees must analyze soil samples for PCBs at all sampling locations within TA-08, or provide the locations of the transformers, and rationale for sampling PCBs from only select locations (i.e., only 20 percent of the samples) and why PCB analyses are not needed at other locations (e.g., PCB's were not proposed in the analytical suite for AOC 08-001(a) and AOC 08-001(b), but 20 percent of the samples were proposed for PCB analysis at SWMU 08-002, SWMU 08-003(a), and SWMU 08-009(a), and all samples from SWMU 08-004(b) are proposed to be analyzed for PCBs). Revise the Work Plan to explain how PCB analysis is chosen at all locations, in addition to TA-08. See General Comment 1 above.

3. **References in text and figures:**

NMED Comment: The figures and plates depict sewer and drainlines as separate lines. The text in the scope of activities sections frequently propose sampling along a drainline, while the figures associated with these descriptions include sampling locations shown along a sewer line instead of a drainline. For example, Section 6.3.1.3 (Scope of Activities for SWMU 22-010(b) states "[o]ne hundred sixty-nine surface and subsurface samples will be collected from 58 locations adjacent to the tank inlet, septic tank, tank outlet, drainlines, and at the sand filter and outfall area (Plate 12)." Plate 12 includes drainlines and sewer lines, but sample locations are shown along the sewer lines, contrary to what is indicated by the text. Revise the Work Plan to ensure the text and figures are consistent, and clarify whether or not the terms "sewer line" and "drainline" are interchangeable.

4. **Sites Where Structures Were Destroyed by Intentional Burning**:

NMED Comment: In accordance with facility practices and policies in effect at the time, some buildings were destroyed by intentional burning. These structures may have had wood framing that were, or may have been, in contact with high explosives (HE) (e.g., Technical Area 9 (TA-

9), SWMU 09-003(g)). While explosive compounds do not typically contain chlorine, wood and various plastics do. With a chlorine source, dioxins and furans can be generated by combustion. At any AOC, SWMU, or CU where burning was conducted, soil samples must be collected and analyzed for dioxin/furans. Due to the relative low mobility of these compounds in soil, NMED will accept sampling proposals for individual AOCs, SWMUs and CUs which target the upper sample interval(s) at locations slated for sample collection at multiple depths. In proposing sample locations for these analytes, the Permittees must consider past and current site drainage patterns and target the drainages. Revise the Work Plan accordingly.

5. Sites containing fill material

NMED Comment: Excavations resulting from the removal of former sewers, sumps and septic systems have been backfilled with imported fill. The Permittees must ensure the proposed samples are collected below fill material in native soil or tuff. Revise the Work Plan, where applicable, to indicate samples are being collected below fill material and from native media.

6. Discrete verses Composite Sampling

NMED Comment: The document does not state whether discrete or composite samples will be collected. Nonetheless, all samples must be collected as discrete samples, including investigation derived waste samples analyzed for volatile organic compounds (VOCs).

Specific Comments:

7. Section 2.3.4 (Cleanup Standards), page 7:

Permittees' Statement: "[a]s specified in section VII.B.1 of the Consent Order, soil screening levels will be used as soil cleanup levels unless they are determined to be impractical or unless values do not exist for the current and reasonably foreseeable future land use. Human health screening levels for chemicals and radionuclides are provided in analytical data tables."

NMED Comment:

a. Section VII.B.1 of the Consent Order addresses interim measures while section VIII of the Consent Order addresses cleanup and screening levels. Revise the Work Plan to reference the correct section of the Consent Order.

b. Explain how the soil cleanup levels would be determined to be impractical, and under what circumstances would the soil cleanup levels not exist for the current and reasonably foreseeable future land use.

c. Specify in which tables the human health soil screening levels for chemicals and radionuclides are provided (e.g., cite the screening levels as listed in a separate table).

8. Section 4.1 (AOC 08-001(a), Off-Gas System), page 16:

NMED Comment: The discussion of historical uses of AOC 08-001(a) does not indicate if any drains, sumps, or sinks are or were located in building 08-1. The Permittees must revise this section to provide such a discussion and propose sampling. Include engineering drawings of building 08-1, if available.

9. Section 4.2 (AOC 08-001(b), Off-Gas System), page 17:

NMED Comment: The Permittees must revise this section to discuss any drains, sinks, or sumps associated with building 08-2. If present, the Permittee must propose sampling at these locations and provide engineering drawings, if available.

10. Section 4.3 (SWMU 08-002, Gun Site) and Section 4.3.3 (Scope of Activities for SWMU 08-002), pages 17-18:

NMED Comment: Propose surface clearance to remove any potential debris and propose sampling in the drainages in the vicinity of the site and the drainages associated with Anchor Ranch Road.

11. Section 4.4.1.3 (Scope of Activities for SWMU 08-003(a)), page 20, Figure 4.4-2, Proposed sampling locations for Consolidated Unit 08-003(a)-00 [SWMUs 08-003(a), 08-004(a), and 09-009(a)], and Table 4.4-1, Proposed Sampling at SWMU 08-003(a):

NMED Comment: In Figure 4.4-2, the Permittees propose to collect one sample (3a-15), located between proposed sample locations 3a-14 and 9a-8 along a 60 foot sewer line. In addition to sample 3a-15, the Permittees must propose an additional sample between 3a-14 and 9a-8. Revise the text, figures, and tables accordingly.

12. Section 4.4.3 (SWMU 08-004(b), Drainline), page 21:

Permittees' Statement: "Building 08-2 was built in 1943 and served as a process building for the gun site (SWMU 08-002). After World War II, the building was used as a machine shop and for storage."

NMED Comment: The proposed sampling locations and chemical analyses are addressed in Section 4.4.3.3 (Scope of Activities for SWMU 08-004(b)). Because Building 08-2 was used as a machine shop, the soil samples must also be analyzed for diesel range organics (DRO) and oil range organics (ORO). Revise the Work Plan to include these analytical methods for proposed samples 4b-1 through 4b-5.

13. Sections 4.5.1 (Summary of Pervious Investigations for SWMU 08-004(c)) and 4.5.3 (Scope of Activities for SWMU 08-004(c)), page 23:

Permittees' Statement: "[n]o previous investigations have been conducted at SWMU 08-004(c) because the approved 1993 work plan states that characterization of SWMU 08-004(c) will be deferred until removal of building 08-3 (LANL 1993, 020949, pp. 5-27–5-28)." "[t]he floor drains inside the building will not be sampled in consideration of historic restoration to the building in the near future."

NMED Comment: SWMU 08-004(c) must be characterized upon removal of building 08-3.

14. Section 4.5 (SWMU 08-004(c), Floor Drain and Sumps, and Section 4.5.3 (Scope of Activities for SWMU 08-004(c)), page 23:

Permittees' Statements: "[b]uilding 08-3 was originally constructed to house diesel-powered electrical generators that provided the electricity necessary to support operations at buildings 08-1 and 08-2 and the gun site" and "[t]he drainage further downgradient will be characterized by sampling at SWMU 08-003(a) (section 4.4.1.3)."

NMED Comment: Because building 08-03 historically housed diesel powered electrical generators, all samples associated with SWMU 08-003(a) and 08-004(c), including associated drainages, must be analyzed for DRO and ORO. Revise the Work Plan to include proposed DRO and ORO analyses in the appropriate sections.

15. Section 4.6 (SWMU 08-004(d), Drains), page 24:

NMED Comment: The Permittees discuss sampling around the concrete foundation of former building 08-24 (Isotope Building) and adjacent to the associated drainline (the drainline is labeled as a sewer line on Figure 4.6-2). The Permittees indicate that this location was contaminated with strontium-90 and state that "[a] radiation survey, conducted one month following the spill, detected contamination in concrete cracks on the loading dock and between dock sections, and the area was sealed with concrete to avoid spreading the contamination." Because contamination was detected in the cracks of the concrete, the Permittees must discuss how they will determine if contaminants penetrated below the concrete. Revise the Work Plan accordingly.

16. Section 4.6 (SWMU 08-004(d), Drains), page 25:

Permittees' Statement: "[s]amples adjacent to the drainlines will be collected at 50-ft intervals along the path of the drainline, beginning at the point of exit from the building or tank up to the point where the drainline is plugged or disconnected, to coincide with the expected locations of the pipe joints. Samples from these locations will be collected at two depth intervals (immediately below the level of the drainline or tank and 5 ft below the level of the drainline or tank)."

NMED Comment: The above paragraph references a tank that was not mentioned in earlier descriptions of this SWMU. Revise the Work Plan to indicate if a tank is present, and if so, include a description of the tank (e.g., address its location, dimensions, what it stored).

17. Section 4.7.3 (Scope of Activities for SWMU 08-005), page 26:

Permittees' Statement: "[s]amples will not be analyzed for radionuclides because the sump was used only for handling HE with no record or indication of radionuclide use at the site."

NMED Comment: The Permittees state this sump was only used for handling HE. Revise the Work Plan to include the analyses of explosive compounds for all samples collected from SWMU 08-005.

18. Section 4.8 (SWMU 08-006(a), MDA Q), page 26:

NMED Comment: The Permittees have limited information about the location and dimensions of MDA Q. The Permittees propose to collect four soil samples, one from each side of the approximate location of MDA Q from the depths of 0-1 ft and 4 to 5 ft. The proposed sampling is too limited to characterize the vertical and horizontal extent of contamination, nor does it address the drainages. To address these deficiencies and definitively locate the landfill, the Permittees must dig three trenches within the approximate boundaries of MDA Q, as shown in Figures 4.8-2. The Permittees must also collect a representative number of samples within the trenches to determine the vertical and horizontal extent of contamination. The Permittees may use field screening to guide the investigation. Revise the Work Plan to include the locations of the exploratory trenches, describe field screening methods that will be used, include proposed sample locations within the trenches, and propose sampling locations in the associated drainage pathways. If waste is discovered, the Permittees must remove it during excavation activities or propose to submit a work plan to remove the waste in the Recommendations Section of the Investigation Report

19. Section 4.9 (AOC 08-009(c), Drainline and Outfall), pages 26 and 27:

NMED Comment: AOC 08-009(c) includes a drainline, outfall, and french drain that surround building 08-23. The Permittees proposed sampling only at the outfall and downgraident of the outfall. Revise the Work Plan to propose sampling of the french drain system and along the drainline.

20. Section 4.9 (AOC 08-009(c), Drainline and Outfall), pages 27:

Permittees' Statement: "[t]he Betatron building was built in 1950 and housed a 20-million-volt betatron, electron accelerator that was used to radiograph large items such as nuclear fuel elements, waste containers, and weapon assemblies. In 1990, approximately 1 pint of oil containing an unknown concentration of PCBs is reported to have spilled from transformers placed in the building's basement. The spill was cleaned. Following the spill, all transformers were replaced. Because the basement floor drains could not be plugged because of the possibility of flooding the transformers, a trough and absorbent boom were installed to intercept any future leaks. The floor drains were subsequently plugged in 1996."

NMED Comment: The Permittees propose to analyze only for PCBs. From the description above, other potential contaminants include radionuclides, metals, VOCs, SVOCs, and ORO. All samples collected from 2-3 feet must be analyzed for metals, radionuclides, VOCs, and ORO, and for SVOCs if ORO is detected at or above 200 mg/kg. Revise the Work Plan accordingly.

21. Section 4.10 (SWMU 08-009(d), Drains), pages 27 and 28:

NMED Comment: The Permittees propose sampling at the outfall and downstream from the outfall, but do not propose sampling from the drain in building 08-22, at the drainline as it leaves the building, or along the drainline to the outfall. Revise the Work Plan to propose sampling locations at the drain located in Building 08-22, the location where the drainline leaves the building, and along the drainline to the outfall. Include a description of the drainline construction.

22. Section 4.11 (SWMU 08-009(e), Outfall), pages 28 and 29:

NMED Comment: The Permittees do not propose to collect samples along the drainlines from building 08-21 to the former NPDES outfall 06A075. Further, Figure 4.11-2 includes a location labeled "Drop Inlet" without indicating its function or purpose. Revise the Work Plan to propose collection of samples as the drainline leaves building 08-21, along the drainline west and east of the Drop Inlet and at the Drop Inlet itself. Include a description of the drop inlet and its purpose.

23. Section 4.12 (AOC 09-009(f), Outfall) and Figure 4.12-2 (Proposed sampling locations for AOC 08-009(f)), page 30:

NMED Comment: The proposed sample locations for this AOC are provided in Figure 4.12-2 (Proposed sampling locations for AOC 08-009(f)). Include additional sample locations at outfall 08-0074 and along the storm drain.

24. Sections 4.13 (AOC C-08-014, Building) and 4.13.3 (Scope of Activities for SWMU AOC C-08-014), pages 30 and 31:

Permittees' Statement: "AOC C-08-014 is building 08-21 at TA-08." "[b]uilding 08-21 is currently active. Therefore, it is proposed that characterization of the building be delayed until the building is removed."

NMED Comment: Indicate in the Investigation Report that investigation at AOC C-08-014 will be delayed until the building is removed.

25. Section 5.3.3 (Scope of Activities for SWMU 09-001(d)), page 36:

NMED Comment: SWMU 09-001(d) contains two former firing chambers associated with building 09-01. The Permittees propose sampling south and southwest of the firing

chambers. Because the firing chambers and associated building 09-1 have been removed, the Permittees must also propose sampling within the footprint of the firing chambers and within the footprint of building 09-1. Revise the Work Plan accordingly.

26. Section 5.3.3 (Scope of Activities for SWMU 09-001(d)), page 36:

NMED Comment: The Permittees indicate in the text that 20 percent of the samples will be analyzed for PCBs. However, Table 5.3-1 (Proposed Sampling at SWMU 09-001(d)) does not include any samples proposed for PCB analysis. Revise Table 5.3-1 to indicate which samples will be analyzed for PCBs.

27. Section 5.7 (SWMU 09-003(g), Former Sump and Pipes), page 40:

Permittees' Statement: "SWMU 09-003(g) (Figure 5.7-1) is identified in the 1990 SWMU report (LANL 1990, 007511) as the sumps and associated pipes in former building 09-2 (a photo darkroom and boiler plant)...[t]he condensate pits and pipes associated with former building 09-2 were removed in 1965."

NMED Comment: This section describes only the sumps and does not include a description or location of the associated piping, nor sampling at the pipes. Revise the Work Plan to indicate if piping was present at this SWMU, and if so, include its location in the associated figure(s). Propose adequate sampling for the piping.

28. Section 5.7 (SWMU 09-003(g), Former Sump and Pipes) and Section 5.7.1 (Summary of Previous Investigations for SWMU 09-003(g)), page 40:

Permittees' Statement: "[b]uilding 09-2 was decommissioned in 1959 and intentionally destroyed by burning in 1960." "[a]n RFI was conducted at SWMU 09-003(g) in April 1994. SWMU 09-003(g) was sampled as part of a set of sites referred to as the Anchor Ranch East Site set. SWMUs 09-001(d), 09-003(h), and 09-003(i) were also part of this set. The set was grouped because of past activities (HE research, development, and testing) and demolition and decommissioning of their associated structures (buildings 09-1, 09-2, 09-3, and 09-13)."

NMED Comment: Building 09-2 may have had wood framing that may have had contact with HE. The Permittees must therefore also analyze for dioxins and furans. Clarify if buildings 09-1, 09-3, and 09-13 were also destroyed by intentional burning, and if so, include analysis for dioxins and furans at these sites. See General Comment 4. Revise the Work Plan accordingly.

29. Section 5.8 (SWMU 09-003(h), Former Sump and Pipes), page 41:

NMED Comment: This Section discusses a catch basin that functioned as a settling tank that received wastewater from drain troughs located in both sections of the building. The description did not discuss associated discharge piping. Revise this Section to discuss the discharge piping at this SWMU. If piping was present, propose sample locations along

the former piping.

30. Sections 5.8 SWMU 09-003(h), Former Sump and Pipes) and 5.8.3 (Scope of Activities for SWMU 09-003(h)), pages 41-42:

Permittees' Statement: "SWMU 09-003(h) (Figure 5.8-1) is identified in the 1990 SWMU report (LANL 1990, 007511) as the sump and associated pipes in former building 09-3 (an HE casting facility). Engineering drawings show the "sump" in building 09-3 consisted of a single catch basin that functioned as an HE settling tank...The catch basin received wastewater from drain troughs in both sections of the building...Building 09-3 was decommissioned in 1959 and removed in 1965, including the catch basin and drain troughs."

NMED Comment: The proposed sampling does not include the drain troughs or associated discharge piping, nor were these included in Figure 5.8-2 (Proposed sampling locations for SWMU 09-003(h)). Revise the Work Plan to include the drain trough locations and associated discharge piping in Figure 5.8.2, and propose sampling within and around the troughs and along the associated piping. If sampling cannot be conducted, provide an explanation why the sampling cannot be conducted during this phase of investigation.

31. Section 5.9 (SWMU 09-003(i) Former Sump and Pipes), page 42:

NMED Comment: Section 5.9 indicates SWMU 09-003(i) is comprised of a former sump and piping that served former building 09-13. Figure 5.9.2 (Proposed sampling locations for SWMU 09-003(i)) only depicts SWMU 09-003(i) as building 09-13 and does not include the locations of the former sump and associated piping. Revise Figure 5.9.2 to show the locations of the sump and piping. See also Comment 32.

32. Section 5.9.3 (Scope of activities for SWMU 09-003(i)), pages 43:

Permittees' Statement: "[t]welve subsurface samples will be collected from six locations beneath and around the perimeter of the former sump (Figure 5.9-2). Four subsurface samples will be collected from two locations beneath the former location of the sump from two depths (4–5 and 9–10 ft bgs). Eight subsurface samples will be collected around the perimeter of the former sump from two depths (4–5 and 9–10 ft bgs)."

NMED Comment: Figure 5.9-2 (Proposed sampling locations for SWMU 09-003(i)) includes the two sample locations within the footprint of building 09-13 and one sample located on each side of the building perimeter. Revise the Work Plan to verify that the sampling locations include the locations of the sump and piping. Because building 09-13 was 17 feet wide by 20 feet long, additional sample locations are required. Propose one additional sampling location on either side of building 09-13 (i.e., each side of building 09-13 must have two sample locations).

33. Section 5.10 (Consolidated Unit 09-004(a)-99), page 43:

NMED Comment: The SWMUs included in this consolidated unit are sumps that discharged to a drainline, shown as an industrial waste line in Plate 4 (Proposed sampling locations for Consolidated Unit 09-004(a)-99 [SWMUs 09-004(a), SWMUs 09-004(b), SWMUs 09-004(c), SWMUs 09-004(d), SWMUs 09-004(e), SWMUs 09-004(f), SWMUs 09-004(h), SWMUs 09-004(i), SWMUs 09-004(j), SWMUs 09-004(k), SWMUs 09-004(l), SWMUs 09-004(m), SWMUs 09-004(n)]). Revise this section of the Work Plan to describe the drainline (e.g., size and composition) and indicate if this line is still in place. If the drainlines are still present, specify if there are plans for removal and, if so, include the details pertaining to its removal.

34. Section 5.10 (Consolidated Unit 09-004(a)-99), page 43:

NMED Comment: The SWMUs included in this consolidated unit (SWMU 09-004(a), SWMU 09-004(b), SWMU 09-004(c), SWMU 09-004(d), SWMU 09-004(e), SWMU 09-004(f), SWMU 09-004(h), SWMU 09-004(i), SWMU 09-004(j), SWMU 09-004(k), SWMU 09-004(l), SWMU 09-004(m), and SWMU 09-004(n)) are sumps that discharged to drainlines, all associated with buildings that likely also have discharged wastewater to them. The Permittees did not propose any sampling from the drains located within any of the buildings. Revise the Work Plan to propose sampling at all floor drains located within the buildings for each associated SWMU. The text, tables, and plates must be revised accordingly.

35. Section 5.10.5 (SWMU 09-004(e), Sump), Section 5.10.5.3 (Scope of Activities for SWMU 09-004(e)), Section 5.10.6 (SWMU 09-004(f), Sump), and Section 5.10.6.3 (Scope of Activities for SWMU 09-004(f)), pages 47-48:

NMED Comment: The descriptions for SWMU 09-004(e) and SWMU 09-004(f) indicate they are still operational. For both SWMUs, the Permittees propose limited sampling, but none around the sump or from the drainline(s) leaving the building. Revise the Work Plan to include sampling around and beneath the sumps and along the drainlines leading from buildings (09-45 and 09-46) to the sumps, provide an explanation why sampling cannot be completed. In that case, propose when such sampling will be conducted.

36. Section 5.10.6.3 (Scope of Activities for SWMU 09-004(f)), page 48:

Permittees' Statement: "[a]ll samples will be analyzed for TAL metals, nitrate, perchlorate, total cyanide, explosive compounds, PCBs, SVOCs, VOCs, americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, and pH. Samples will not be analyzed for radionuclides because the sump was used only for handling HE with no record or indication of radionuclide use at the site. Table 5.10-7 provides a summary of the proposed sampling strategy, locations, depths, and analytical suites."

NMED Comment: The above statement indicates samples will be analyzed for americium-241, gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium, but also states samples will not be analyzed for radionuclides. Revise the Work Plan to resolve this discrepancy. The text must also be consistent with Table 5.10-7.

37. Section 5.10.7.3 (Scope of Activities for SWMU 09-004(h)), page 49:

Permittees' Statement: "[t]hirty-eight surface and subsurface samples will be collected from 19 locations adjacent to the drainlines, the sump inlet, the sump, and the sump outlet as well as at the outfall and in the drainage (Plate 4)."

NMED Comment: The Permittees propose sample collection from the sump, sump inlet, and sump outlet found in Plate 4. Plate 4 does not depict any sample locations at or around the sump, or from the drainline leaving the building. Revise the Work Plan to provide sampling locations around and directly beneath the sump and from the drainline leaving the building or explain why sampling cannot be completed (see also Comment 33).

38. Section 5.10.7.3 (Scope of Activities for SWMU 09-004(h)), page 49:

Permittees' Statement: "[t]wenty-two samples will be collected from 11 locations adjacent to the common drainline where the outlet drainlines of SWMUs 09-004(h, a, b, i, l) connect. The samples will be collected at approximately 100-ft intervals along the path of the drainline, beginning at the joint of the outlet drainline of SWMU 09-004(h), to coincide with the locations of the pipe bends and the joints of the outlet drainlines of SWMUs 09-004(a, b, i, l). Each location will be sampled at two depth intervals (immediately below the level of the drainline and 5 ft below the level of the drainline)."

NMED Comment: The Permittees propose sampling locations at approximately 100 foot intervals along the drainline. For all other SWMUs associated with Consoilidated Unit 09-004(a)-99, the Permittees propose 50-ft sampling intervals. The Permittee must collect samples along the drainline from SWMU 09-004(h) at 50-ft intervals, or provide sufficient justification for sample collection at 100-ft intervals.

39. Table 5.10-11 (Proposed Sampling at SWMU 09-004(k)):

NMED Comment: The sample locations identified in the last row of the "Location Number" column denotes 4k-7 through 4k-10. These locations are provided on Plate 4. Plate 4 also includes sample location 4k-11. Revise Table 5.10-11 to include sample location 4k-11.

40. Section 5.10.11.3 (Scope of Activities for SWMU 09-004(l)), page 52:

NMED Comment: The Permittees state samples will be collected along the path of the drainline to coincide with the expected locations of the pipe bends and joints. Include an additional sample location north of location 4l-8 at the intersection where the industrial

waste line and sewer line meet. Revise the text, associated tables, and plates accordingly.

41. Section 5.10.12.3 (Scope of Activities for SWMU 09-004(m), page 53:

NMED Comment: The Permittees propose to analyze for radionuclides at the proposed sample locations. Because the drainline from this sump connects with the drainline associated with SWMU 09-004(n); all drainline and outfall sampling associated with SWMU 09-004(n) must be analyzed for radionuclides (sample locations 4n-8 through 4n-29). Revise the Work Plan accordingly.

42. Section 5.10.13.3 (Scope of Activities for SWMU 09-004(n)), page 54:

Permittees' Statement: "Twenty-two samples will be collected from 11 locations adjacent to the common line where the outlet drainlines of SWMUs 09-004(f and n) connect. The samples will be collected at approximately 50-ft intervals along the path of the drainline, beginning at the joint of the outlet lines of SWMUs 09-004(f and n), to coincide with the locations of the pipe bends as well as adjacent to the inlet and outlet of a manhole and the manhole itself. Each location will be sampled at two depth intervals (immediately below the level of the drainline and 5 ft below the level of the drainline), except at the manhole where samples will be collected at two depths (immediately below the level of the manhole and 5 ft below the level of the manhole)."

NMED Comment: The Permittees discuss sampling adjacent to the inlet and outlet of a manhole and the manhole itself. The manhole location does not appear in Plate 4, nor is a manhole symbol present in the Legend. Revise the Work Plan to identify the location of the manhole on Plate 4 and identify in table 5.10-14 (Proposed Sampling at SWMU 09-004(n)) which samples are associated with the manhole.

43. Section 5.11.3 (Scope of Activities for SWMU 09-004(g)), page 55:

NMED Comment: The Permittees do not propose to collect samples from the floor drain within building 09-50, from the drainline as it leaves building 09-50, or from the drainline as it enters the sump SWMU 09-004(g). The Permittees proposed to collect one sample at the drainline between where it leaves the building and enters the sump. Revise the Work Plan to include sample locations from the floor drain within the building, from the drainline as it leaves the building, and from the drainline as it enters the sump.

44. Section 5.12.3 (Scope of Activities for SWMU 09-004(0)), page 55:

NMED Comment: The Permittees propose sampling at and downstream of the outfall, but not from the floor drains in the associated building (09-48), drainlines from the building to the sump, the drainline from the sump that connects to the sewer line, and along the sewer line to the outfall. Revise the Work Plan to propose sampling at these locations, or explain why sampling is unnecessary.

45. Section 5.13 (SWMU 09-005(g), Septic System), page 56:

NMED Comment: It is not clear from the description if SWMU 09-005(g) is still in use. Revise the Work Plan to clarify the current status of the septic system.

46. Section 5.13.3 (Scope of Activities for SWMU 09-005(g)), page 56:

NMED Comment: The Permittees discuss the proposed sampling locations but do not address sampling around the septic tank itself. Propose sample locations at the point the sewer line leaves building 09-50, along the sewer line from building 09-50 to the septic tank (structure SWMU 09-005(g)), the locations where the sewer line enters and leaves the septic tank (structure SWMU 09-005(g)), and around and beneath structure SWMU 09-005(g).

47. Section 5.14.3 (Scope of Activities for SWMU 09-006), page 58, Table 5.14.-4 (Proposed Sampling at SWMU 09-006), and Figure 5.14-4 (Proposed sampling locations for SWMU 09-006):

NMED Comment: The Permittees discuss the proposed sample locations in the scope of services. The proposed sample locations are found in Table 5.14-4 and Figure 5.14-4. Two sample locations (6-11 and 6-12) found in Figure 5.14-4 are not included in Table 5.14-4. Revise Table 5.14-4 to include sample locations 6-11 and 6-12.

48. Section 5.15.2.3 (Scope of Activities for SWMU 09-005(d)), page 60 and Figure 5.15-5 (Proposed sampling locations for Consolidated Unit 09-008(b)-99 [SWMUs 09-005(a), 09-005(d) and 09-008(b)]:

NMED Comment: In Figure 5.15-5, the Permittees must include an additional sample location west of proposed sample location 5d-1 at the location where the four sewer lines intersect. Revise the Work Plan accordingly.

49. Section 5.15 (Consolidated Unit 09-008(b)-99), page 58:

Permittees' Statement: Section 5.15.1 (SWMU 09-005(a), Former Septic System), page 58: "[i]nstalled in 1950, the SWMU 09-005(a) septic system served buildings 08-20, 08-21, 08-22, 08-23, 09-2 (LASL 1944, 110443), and 08-24, where the strontium-90 spill occurred in 1954 (see section 4.6)." Section 5.15.2 (SWMU 09-005(d), Septic Tank), page 59: "[t]he septic tank was installed in 1970 as part of a sanitary-system upgrade that consisted of replacing septic tank 09-81 [SWMU 09-005(a)]. All former discharge to septic tank 09-81 was rerouted to septic tank 09-211. Septic tank 09-211 received effluent from buildings 08-20, 08-21, 08-22, 08-23, and 08-24, where the strontium-90 spill occurred in 1954 (see section 4.6). The septic tank discharged to the SWMU 09-008(b) oxidation pond. In 1988 the contents of septic tank 09-211 were removed, the access ports were removed, sand was backfilled over the tank, and the tank was decommissioned (LANL 1996, 054586)."

NMED Comment: As indicated above, buildings 08-20, 08-21, 08-22, 08-23, 08-24, and 09-2 discharged wastewater to various SWMUs associated with CU 09-008(b)-99). The Work Plan does not propose any sampling from the drains located in these building to the septic lines or along the septic lines to the septic tanks. Propose sampling locations from the floor drains within the buildings, the locations where the sewer lines leaves each building, and along the sewer lines at fifty foot intervals and at the septic tank inlet locations.

50. Section 5.16 (SWMU 09-009, Surface Impoundment), page 61:

Permittees' Statement: "[t]he two sand filters, which cover a total area of 33 ft wide × 60 ft long, have a flexible membrane liner and are surrounded by a concrete curb...The surface impoundment and sand filter system were decommissioned when the Sanitary Wastewater Systems Consolidation (SWSC) came online in 1992."

NMED Comment: The Permittees must describe the depths of the sand filters. The above description identifies two sand filters; however, Figures 5.16-1 (Site features of SWMU 09-009) and 5.16-2 (Proposed Sampling locations for SWMU 09-009) only depict one sand filter. These Figures must be revised to show the locations of both sand filters. Finally, the Permittees indicate the surface impoundment and sand filter system were decommissioned in 1992. The Permittees must explain if the structures have been removed or will be removed in the future. Revise the Work Plan accordingly.

51. Section SWMU 09-009, Surface Impoundment, page 61:

Permittees Statement: [t]he surface impoundment was constructed in 1961 to treat sanitary waste from buildings 09-20, 09-21, 09-28, 09-29, 09-32, 09-33, 09-34, 09-35, 09-37, and 09-38 (LANL 1993, 020949, p. 5-45) and discharged to an outfall approximately 300 ft to the northwest. After the sand filters were installed in 1974, the surface impoundment discharged effluent to the sand filters."

NMED Comment: SWMU 09-009 treated sanitary sewer wastewater from ten buildings. The Permittees must indicate whether only sanitary sewer entered the sewer lines leading to the surface impoundment. If non-sanitary waste was discharged to the surface impoundment through drains in the buildings to the sewer lines, this must be discussed in the revised Work Plan. A description of building activities must also be included to identify potential waste streams. If non-sanitary waste entered the sewer lines, the Permittees must propose sampling locations from the building floor drains, outlets from the buildings to the sewer lines and along the sewer lines or provide an explanation why this is not needed.

52. Figure 5.16-1 (Site features of SWMU 09-009):

NMED Comment: Figure 5.16-1 does not show the locations of buildings 09-20, 09-21, 09-28, 09-29, 09-32, 09-33, 09-34, 09-35, 09-37, and 09-38, which are all sources of waste discharge to SWMU 09-009. Include a figure that depicts the building locations

and sewer lines related to SWMU 09-009.

53. Figures 5.16-2 (Proposed Sampling Locations for SWMU 09-009):

NMED Comment: Include additional sampling locations as described below:

a. One sample location at the intersection of the three sewer lines, west of 9-1. Samples must be collected from directly below the sewer line at the fill-soil/tuff interface and five feet below the sewer line.

b. One sample location at the intersection where the sewer lines split leaving the surface impoundment. A sample must be collected from directly below the sewer line at the fill-soil/tuff interface and five feet below the line.

c. Two sample locations beneath the middle of the sand filter(s); one location must be between 9-21 and 9-23 and the other location between 9-20 and 9-22. Samples must be collected from 0-1 and 4-5 feet below ground surface (bgs).

d. All samples collected from the sand filters must be collected below the depth of the sand filters from native soils; this must be clarified in the revised Report.

e. One surface sample must be located east of outfall 05A066, between 09-16 and 09-29 (on the point of contour line 7510), from 0-1 and 2-3 feet bgs.

54. Table 5.16-1 (Proposed Sampling at SWMU 09-009):

NMED Comment: The Permittees propose PCB analysis only from the sample locations associated with the drainlines. If PCBs are detected at any of the drainline sample locations, the Permittees must analyze for PCBs at the proposed sample locations within the surface impoundment, sand filters, outfalls, and downgradient of the outfall from the 0-1 foot interval. Revise the Work Plan to include this sampling scenario.

55. Section 5.17.1 (Summary of Previous Investigations for AOC 09-010(a)) and 5.18.1 (Summary of Previous Investigations for AOC 09-010(b)), pages 63-64:

Permittees' Statement: The Permittees state in both Sections "[t]he former sites of the footing[s] for the steel pipe posts were backfilled with gravel."

NMED Comment: For both AOCs, the Permittees discuss the collection of samples from 0-1 and 4-5 feet bgs. The Permittees must clarify in the revised Work Plan if the proposed samples collected from 0-1 foot and 4-5 feet will collected from native soils below the gravel fill at the footing locations.

56. Section 5.19.1 (Summary of Previous Investigations for AOC 09-011(b)), page 64:

Permittees' Statement: "[a]dditional sampling was conducted as part of the same RFI in April 1997. Four additional surface (0-0.5 ft bgs) samples were collected from a drainage channel that received runoff from the site."

NMED Comment: The Permittees do not propose sampling in the drainage channel that received runoff from the site. Revise the scope of work for AOC 09-011(b) to propose sampling within the drainage channel.

57. Section 5.20.3 (Scope of Activities for AOC 09-011(c), page 65:

NMED Comment: The Permittees propose to collect a surface and subsurface sample from one location at depths of 0-1 and 4-5 feet bgs. Clarify in the revised Work Plan that the samples will be collected from native material rather than fill.

58. Section 5.21 (AOC 09-012, Disposal Pit[s]), page 66:

NMED Comment: The Permittees indicate that the disposal pit consists of 15 circular nonvegetated sites approximately 6 feet in diameter, but do not provide the pit depths. Revise the Work Plan to include the depths of the disposal pits or indicate that the depths will be determined during the investigation.

59. Section 5.21.3 (Scope of Activities for AOC 09-012), page 67:

NMED Comment: The Permittees propose to collect one sample from the center of each of the circular nonvegetated disposal pits. These disposal pits appear to be on a slope, but the Permittees do not propose to collect any samples downhill from the disposal pits. Revise the Work Plan to include a sufficient number of sample locations downhill from each of the 15 disposal pits. Samples must be collected from depths of 0-1 foot and 2-3 feet bgs. If such samples cannot be collected, provide justification and propose alternative sampling locations.

60. Section 5.22 (SWMU 09-013, MDA M), page 67:

Permittees' Statement: "[t]he main area occupies about 3.2 acres and is located approximately 1600 ft southeast of building 22-120. The 150 ft wide x 260 ft long satellite area is located approximately 750 ft northwest of the main area."

NMED Comment: According to Plate 5 (Site Features of 09-013), the main area is located southwest (not southeast) of building 22-120. Revise the Work Plan to correct this discrepancy. In addition, the Permittees do not discuss the depths of the two disposal areas. Revise the Work Plan to include this information.

61. Section 5.22 (SWMU 09-013, MDA M), page 67:

Permittees' Statement: "[s]tructures were flash burned to remove any HE residue and deposited over the MDA surface. Debris from the construction of current TA-08 and TA-09 facilities (1949–1965) and other sites (1960–1965) were also deposited at MDA M. Materials present at the MDA included metal debris, wood debris, laboratory appliances and fixtures, and metal and glass containers."

NMED Comment: Wood structures that were flashed burned were potentially contaminated with HE. While explosive compounds do not typically contain chlorine, wood and various plastics do. With a chlorine source, dioxins and furans can result from combustion. The soil sample locations 13-1 through 13-29 collected from the 0-1 foot intervals must be analyzed for dioxin/furans. Revise the associated text and tables within the Work Plan to include the dioxin/furan analyses. Depending on whether dioxins and furans are detected, sample locations 13-30 through 13-33 may also require analyses of dixons/furans as well. See also General Comment 4.

62. Section 5.22.3 (Scope of Activities for SWMU 09-013), page 68:

Permittees' Statement: "[t]he samples will be collected in a grid pattern of 50-ft intervals with additional samples beyond the SWMU boundary in the downgradient direction from four depths (0–1 ft, 4–5 ft, 9–10 ft, 19–20 ft bgs)."

NMED Statement: The locations shown on Plate 6 (Proposed Sampling Locations for SWMU 09-013) are at approximately 70 to 100 foot intervals. Therefore, additional sample locations maybe required. Revise Plate 6 to depict sample locations at 50 foot intervals.

63. Section 5.23 (AOC 09-014, Firing Site), Section 5.23.3 (Scope of Activities for AOC 09-014), pages 68-69, and Figure 5.23-2 (Proposed sampling locations for AOC 09-014):

Permittees' Statement: "[t]he Nu Site firing point was to the east of the camera mount building. The firing point consisted of a 3.5-ft-wide × 12–ft-long × 1-ft-thick reinforced concrete apron containing two small firing pits (LANL 1993, 020949). The apron was on the west side of an earth mound within a loop access road that is visible on 1958 aerial photographs (USAF 1958, 015887). The apron faced toward the camera mount building to the west. The firing point was used from 1945–1950 to test lens charges of up to 135 lb of HE. Smaller shots were conducted in the two firing pits. Shots large enough to damage the apron were occasionally fired in unspecified locations outside the slab but within camera range (LANL 1994, 020949, pp. 5-69, 6-114). It is likely that these larger shots took place in the nonforested areas immediately north and south of the apron (USAF 1958, 015887).

NMED Comment:

a. The locations of the firing pits described above were not provided in Figure 5.23-2 (Proposed sampling locations for AOC 09-014). Revise Figure 5.23-2 to include these features.

b. In Figure 5.23-2, AOC-14 is identified as a green area that encompasses the Camera Mount Structure, the Firing Site, and the Concrete Apron Structure. While the description indicates that firing occurred within the green area provided in the figure, sampling was not proposed in this area. Revise the Work Plan to propose sampling within the area defined as AOC 09-014 (green area) of Figure 5.23-2.

c. While larger shots may have occurred in the nonforested areas immediately north and south of the apron, the Permittees proposed sampling is limited to the north of the Concrete Apron. Propose sampling at locations south of the concrete apron in the revised Work Plan.

64. Section 5.24 (SWMU C-09-001, Area of Soil Contamination), page 69

Permittees' Statement: "SWMU C-09-001 (Figure 5.24-1) is a former area of soil contamination located at TA-09 near the southeast corner of building 09-31 (a chemical storage building). The contaminated area consisted of a 2 ft wide x 3 ft long region of stained soil beneath the drainpipe at the southeast corner of the building. Before being plugged (at an unknown date), the drainpipe, discharged effluent from spill containment trays within the building."

NMED Comment: The Permittees state that chemicals were stored in building 09-31, but do not describe what types of chemicals stored, or building activities that may have created or released chemicals. Further, the Permittees indicate that a drain pipe discharged effluent from spill containment trays, but do not identify the effluent waste stream. Revise the Work Plan to identify the types of chemicals stored in building 09-31 and the effluent composition.

65. Section 5.24.1 (Summary of Previous Investigations for SWMU C-09-001), page 70:

Permittees' Statement: "[t]he site was restored by filling the excavated area with clean material, recontouring it, and reseeding it with native grasses."

NMED Comment: The Permittees propose the collection of samples from 0-1 and 2-3 feet bgs. It is unclear how much clean material was used when the site was restored. All proposed soil samples must be collected from native media below the clean fill material. Revise the Work Plan to indicate samples will be collected from native media; revisions to the sample intervals may also be necessary.

66. Section 5.24.3 (Scope of Activities for SWMU C-09-001), page 70:

Permittees' Statement: "[t]he initial excavation will extend 3 ft in each direction from the existing location, and screening samples will be collected to determine if additional lateral excavation is required. Soil will be removed, stepping out laterally as needed, until PAH concentrations are below industrial SSLs or risk screening assessment results indicate no potential unacceptable risk from residual contamination. To define the vertical extent of contamination, 10 samples will be collected at the former sampling locations after excavation at two additional depths (2–3 ft bgs and 5–6 ft bgs)."

NMED Comment: The Permittees must revise Section 5.2.4.3 of the Work Plan as directed below:

a. The Permittees state that screening samples will be collected. Clarify that "screening samples" is in reference to field screening; the field screening instrument must also be identified.

b. The Permittees will be analyzing for various constituents (e.g., TAL metals, perchlorate, total cyanide, VOCs). Explain why only polynuclear aromatic hydrocarbons (PAHs) will be used to guide the lateral extent of excavation.

c. Clarify that contaminant removal will be demonstrated with the collection of discrete confirmation samples analyzed by an outside laboratory.

67. Section 5.24.3 (Scope of Activities for SWMU C-09-001), page 70:

Permittees' Statement: "[t]o define the lateral extent of contamination, three additional samples will be collected from one location at the point the drainline exited the building, and nine samples will be collected from three downgradient locations. These samples will be collected from three depth intervals (0-1 ft, 2-3 ft, and 5-6 ft bgs).

NMED Comment: One sample at the point the drain line exited the building will not define the lateral extent of contamination. The Permittee must propose additional sampling locations around the perimeter of SWMU C-09-001 (on the east, west, and south sides of the green box) and one sample approximately 10 feet east of sample 1-6. The samples must be collected from intervals of 2-3 feet and 5-6 feet bgs; the samples must be collected from native media. Revise the text, tables, and figures of the Work Plan accordingly.

68. Section 6.1 (SWMU 22-011, Disposal Pit) and Section 6.1.3 (Scope of Activities for SWMU 22-011), pages 71-72:

Permittees Statement: "[t]he Van Vessem memo mentions both TD Site and Twomile Mesa Site. The two sites were located adjacent to each other on Twomile Mesa. TD Site lies within the current boundaries of TA-22, and the Twomile Mesa site lies within the current boundaries of

TA-06. The Van Vessem memo states that the disposal pits excavated on Twomile Mesa, including the 1946 classified objects pit referred to in the Bradbury memo, were all located in the area designated as MDA F [SWMU 06-007(a)], which is within TA-06. The new information provided in the Van Vessem memo substantiates that the SWMU report incorrectly placed the 1946 disposal pit within TA-22 rather than in TA-06. Therefore, the SWMU 22-011 disposal pit is a duplicate of SWMU 06-007(a), MDA F." "[n]o sampling is proposed for SWMU 22-011. SWMU 22-011 is recommended for NFA based on Criterion 1: The site cannot be located or has been found not to exist, is a duplicate SWMU or AOC, or is located within and therefore investigated as part of another SWMU or AOC."

NMED Comment: Figure 1-3 of the *RFI Work Plan for Operable Unit 1111 Environmental Restoration Program,* (OU-111) dated August 1993, referenced by LA-UR-93-2611 includes a location that appears to be SWMU 6-007(a) and a location for SWMU 22-011; these sites are not close to one another. Even though the text of the OU-111 document and the Work Plan suggests these SWMUs are duplicates, both locations must be investigated. Revise the Work Plan to propose sampling in and around 22-011 to confirm that this location is not a disposal pit or was not contaminated by unidentified historic activities. Also indicate if SWMU 6-007(a) is being investigated under a separate Work Plan; if not, this site must also be investigated under this Work Plan. Revise the Work Plan accordingly.

69. Section 6.2 (SWMU 22-015(c), Drainline and Outfall), page 72:

Permittees' Statement: "[t]he outfall received discharge from the floor drains in building 22-52, which were connected to the outfall via a 6-in.-diameter vitrified-clay pipe (VCP)."

NMED Comment: The floor drains that received discharge to the outfall in building 22-52 are not identified in any of the Plates, nor was sampling of the floor drains discussed. Revise Work Plan to include sampling at the floor drains in building 22-51, or explain why sampling cannot be completed.

70. Section 6.2.3 (Scope of Activities for SWMU 22-015(c), page 73:

Permittees' Statement: "[f]our samples will be collected at two locations adjacent to the drainline. Each location will be sampled at two depth intervals (immediately below the level of [the] line and 5 ft below the level of line)."

NMED Comment: Revise the Work Plan to clarify what the "level of the line" is referring to (e.g., drainline). The "level of the line" terminology is used in other passages of the Work Plan. Clarify all sections where this term is used.

71. Table 6.3-1 (Proposed Sampling at SWMU 22-010(b) and Plate 12 (Proposed sampling locations for Consolidated Unit 22-015(d)-99 [SWMUs 22-010(b), 22-012, 22-015(d), 22-015(e), and 22-016]:

NMED Comment: Some sample identifications, descriptions, and intervals provided in Table 6.3.1 do not correspond with the labels included in Plate 12. Review the Table and Plate 12 and make appropriate corrections. NMED has indentified additional discrepancies between Table 6.3.1 and Plate 12, and has added sample locations as follows:

a. Table 6.3.1 identifies sample locations 10b-5 through 10b-8, 10b-23, 10b-25, 10b-37, and 10b-38 as being located in a leach field and that samples will be collected from immediately below, 5 feet below and 10 ft below the level of the line or tank. In Plate 12, sample locations 10b-23, 10b-25, 10b-37, and 10b-38 are not associated with a line or tank. It is not clear from what depths these latter samples will be collected.

b. Clarify throughout the table the depths that samples will be collected (e.g., directly below a tank, from five feet and ten feet). For example, it is not clear whether sample locations 10b-26 through 10b-36 will be collected below the "level of the line" and from five and 10 ft below the "level of the line," or only from 10 feet below the "level of the line."

c. Clarify that the statement "immediately below the level of the line" indicates a drainline, sewer line, or some other feature. See also Comment 70.

d. Proposed sample locations to be added to the apparent drainage east of sample 10b-13 (between sample locations 10b-13 and 10b-30), south of 10b-32 (between 10b-32 and 10b-33), south of 10b-14 (between 10b-14 and 10b-15), south of 10 b-15 (between 10b-15 and 10b-16), and south of 10b-16 (between 10b-16 and 10b-17).

72. Section 6.3.1.3 (Scope of Activities for SWMU 22-010(b)), page 74:

Permittees' Statement: "[t]he drainlines north of the septic tank 22-51 are active and the inlet to the tank is plugged."

NMED Comment: Sampling was not proposed along the active drain lines that lead to SWMU 22-010(b). The Permittees will be required to investigate these drainlines in the future when they are no longer in use. The need for future sampling must be specifically identified in the Investigation Report.

73. Section 6.3.2.3 (Scope of Activities for SWMU 22-012), page 75:

Permittees' Statement: "[s]ix surface and subsurface samples will be collected at three locations around the perimeter of the concrete decontamination pad from two depths (0–1 and 4–5 ft bgs) (Plate 12)."

NMED Comment: Plate 12 depicts the location of two samples, not three. Revise the Work Plan to include the third sample location (12-3) in Plate 12.

74. Section (6.3.3.3 Scope of Activities for SWMU 22-015(d)), page 76:

Permittees' Statement: "[s]ix samples will be collected from three locations adjacent to the inlet drainline. The samples will be collected at approximately 50-ft intervals along the path of the line, beginning at the point of exit from the building (proposed sampling location 15d-1)."

NMED Comment: According to Plate 12, sample location 15d-1 is not located at the exit point of the building and the additional locations are not located at 50 foot intervals. Revise Plate 12 to accurately show the locations as identified in the text; additional locations will likely be necessary. Table 6.3-5 (Proposed Sampling at SWMU 22-015(d) must also be revised accordingly.

75. Section 6.3.4 (SWMU 22-015(e), Sump), page 77:

Permittees' Statement: "[t]he sump was installed in 1950 to receive discharge from a sink and floor troughs located within building 22-1, as well as wastewater from an equipment wash area (SWMU 22-012) located directly south of the sump."

NMED Comment: The Permittees do not propose any sample locations beneath the floor troughs located within building 22-1. Revise the Work Plan to include sample locations, or explain why such sampling cannot be conducted.

76. Section 6.3.4.3 (Scope of Activities for SWMU 22-015(e)), page 77:

NMED Comment: Sample location 15e-7 is identified as an outfall location to be collected from 0-1 and 2-3 feet below ground surface. Because this is the point where the outfall discharges, the Permittees must also collect a sample from five feet bgs. Revise the Work Plan accordingly.

77. Plate 12 (Proposed sampling locations for Consolidated Unit 22-015(d)-99 [SWMUs 22-010(b), 22-012, 22-015(d), 22-015(e), and 22-016]:

NMED Comment: Plate 12 identifies features 22-7 through 22-12; it is not clear what these features are; they appear to be manmade. Identify whether these features are mounds or basins, and include at least two contour elevation lines within each feature. This may require additional sampling east and south of SWMU 22-012 and SWMU 22-015(e).

78. Section 6.3.5.3 (Scope of Activities for SWMU 22-016), page 78:

Permittees' Statement: "[a] geophysical survey will be conducted to locate the septic tank. Eight samples will be collected at four locations adjacent to the tank inlet, the septic tank, and tank outlet. Each location will be sampled at two depths (immediately below the level of the line or tank and 5 ft below the level of the line or tank).

"If the tank is located as described in the 1997 RFI report (LANL 1997, 056664, p. 160), it distributed to the discharge system of SWMU 22-010(b), which will be characterized by sampling at SWMU 22-010(b). If the tank is located away from SWMU 22-010(b), it will be sampled as follows.

"The drainline from the tank will be located by trenching. If the drainline is located, samples will be collected at approximately 50-ft intervals along the path of the line, beginning at the point of exit from the tank. Each location will be sampled at two depth intervals (immediately below the level of the line and 5 ft below the level of the line)."

NMED Comment: The proposed sampling is unclear. Make the following revisions:

a. In the second paragraph above, the Permittees reference a discharge system of SWMU 22-010(b). The Work Plan must be revised to define the discharge system (e.g., a leach field, a drainline which extends from the tank outlet, an outfall).

b. In reference to the second paragraph above, if the discharge system at SWMU 22-010(b) is the same for SWMU 22-016, clarify which sample locations will be used to characterize the discharge system (e.g., 10b-14 through 10b-21 or 10b-29, 10b-32, 10b-33, and 10b-39).

c. Clearly state that regardless of how the features associated with SWMU 22-016 are identified, the following proposed samples will be collected: "[e]ight samples will be collected at four locations adjacent to the tank inlet, the septic tank, and tank outlet. Each location will be sampled two depths (immediately below the level of the line or tank and 5 ft below the level of the line or tank) and "[i] f the discharge point is located, sampling will be conducted at the outfall and at three downgradient locations to bound the outfall. If a discernable drainage is present, the drainage will be sampled approximately at 30-ft intervals. All outfall and drainage samples will be collected at two depth intervals (0–1 and 2–3 ft bgs)."

79. Table 6.3.7 (Proposed Sampling at SWMU 22-016)

NMED Comment: The locations identified in 6.3-7 (16-1 through 16-5) are not identified on Plate 12. Clarify whether this was intentional, since the exact location of this SWMU is unknown. Revise Plate 12 to include these locations, but note that the locations are approximate.

80. Section 7.1 (SWMU 40-001(c), Septic Tank), Section 7.1.3 (Scope of Activities for SWMU 40-001(c)), page 80 and Table 7.1-1 (Proposed Sampling at SWMU 40-001(c):

NMED Comment: Clarify if SWMU 40-001(c) is still in operation, has been decommissioned, or was removed. Propose sampling along the sewer line shown in Figure 7.1-2, and for SWMU 40-001(c). The proposed sampling locations described in Table 7.1-1 and 7.1.3 are not depicted in Figure 7.1-2. In addition, the proposed sample locations 1c-9 through 1c-17 are not included in Figure 7.1-2. Revise the Work Plan accordingly.

81. Section 7.2 (SWMU 40-003(a), Open Detonation Area), page 80:

NMED Comment: This Section discusses the locations of two open detonation areas but does not discuss their dimensions. Revise the Work Plan to include the dimensions of the open detonation areas, including depths.

82. Section 7.2 (SWMU 40-003(a), Open Detonation Area), page 80:

Permittees' Statement: "[i]n 1958, several instances occurred where intact detonators and pieces of HE were discharged during detonations. Efforts to recover all the scattered detonators and HE were unsuccessful (Anderson and Tucker 1959, 007559)."

NMED Comment: With the exception of the statement above, the Permittees do not discuss the delineation, sampling, or clearance of material in the kickout areas. Revise the Work Plan to discuss the delineation, sampling, and clearance of the kickout areas.

83. Section 7.2 (SWMU 40-003(a), Open Detonation Area), page 80:

Permittees' Statement: "[t]his second site is approximately 1300 ft east of structure 40-15, within a natural amphitheatre at the end of an unnamed dirt road. At the second site, scrap explosive materials were detonated and controlled remotely from structure 40-15. After each detonation, scattered debris was picked up and transported to an appropriate waste disposal site. Rock rubble and crushed tuff that sloughed from the amphitheater wall was pushed to the south, creating an area of fill that extended nearly to the edge of Pajarito Canyon."

NMED Comment: Revise the Work Plan to address sampling of the rock debris at the edge of Pajarito Canyon.

84. Section (7.1.3 Scope of Activities for SWMU 40-001(c)), page 81 and Table 7.2-1 (Proposed Sampling at SWMU 40-003(a)) and Figure 7.2-2 (Proposed sampling for SWMs 40-003(a) and 40-003(b)):

NMED Comment: The Permittees describe the proposed sampling locations and depths in Section 7.1.3, Table 7.2-1, and Figure 7.2-2.

a. The Permittees state "[t]wenty-four surface and subsurface samples will be collected from 12 locations at the first detonation area in a grid pattern of 25-ft intervals (Figure 7.2-2). Samples will be collected from two depth intervals

(0–1 ft and 4–5 ft bgs)." Review the sample interval column of Table 7.2-1; it appears not all samples will be collected from the 4-5 foot bgs interval (3a-8 through 3a-12). Ensure samples will be collected from the bottom of the detonation area and five feet below the base of the detonation area. This must be included in the revised Work Plan.

b. The first row of Table 7.2-1 identifies samples locations 3a-1, 3a-2, 3a-4, 3a-5, and 3a-8 through 3a-12 being located "within the detonation area and around the boundary." The second row identifies sample locations 3a-3, 3a-6, 3a-7 as being within the detonation area. The Permittees have not clearly defined the detonation area. The Figure shows locations that are defined as within the detonation area (e.g., 3a-1) that are in the same locations that are defined as "around the boundary" (e.g., 3a-11). Revise the Work Plan to clearly define the detonation area, the area "around the boundary," and clearly define which samples are associated with these areas.

c. The depths at which the samples will be collected are unclear. For example, the first row indicates samples will be collected from 0-1 ft, 4-5 ft, and 0-1 foot. It is not clear what samples apply to the second 0-1 ft interval. The last row indicates sample 3a-25 will be collected from a depth of 2-3 ft twice. This comment applies to all rows associated with the column titled sample interval. Review the sample intervals presented in Table 7.2-1 and correct the discrepancies.

d. Samples are proposed to be collected from 12 locations in the detonation area located 450 ft east of structure 40-15. Ensure the samples are collected from the bottom of the detonation area and five feet below the base of the detonation unit. The proposed sample locations outside of the detonation area must be clearly described. Samples in the kickout area must be collected from 0-1 and 2-3 ft depths. Revise the Work Plan accordingly.

e. The Permittees do not propose sampling in the associated drainages. Revise the text, tables, and figures to propose sampling in the drainages associated with both detonation areas.

85. In Section 7.3 (AOC 40-003(b), Burn Site), page 81

NMED Comment: The Permittees provide a limited description of the burn pit. Revise the Work Plan to describe what the burn pit was used for, including what materials burned and ignition sources.

86. In Section 7.3 (AOC 40-003(b), Burn Site), page 81 and Section 7.3.1 (Summary of Previous Investigations for AOC 04-003(b), pages 81 and 82;

Permittees' Statement: Section 7.3 states "[t]he burn site consists of three small burning areas and a burn pit. From 1960 to 1985, a wire burn cage (4 ft wide × 4 ft long × 5 ft high) with a steel-plate floor was used [at] three different locations…The burn pit is located between the two northern locations of the burn cage and measures approximately 12 ft wide × 50 ft long × 12 ft deep." Section 7.3.1 states "[t]he Closure Certification Report for the TA-40 Scrap Detonation Site (IT Corporation 1995, 057521) documents that characterization samples were collected at SWMU 40-003(b) in October 1994. These characterization samples were used to identify two small surface areas—approximately 4 ft × 4 ft and 6 ft × 6 ft—requiring remediation based on analytical results that indicated elevated levels of lead…The excavated sites were restored with clean backfill that was compacted and graded to the original contours of the surrounding terrain (IT Corporation 1995, 057521, p.15). A 20-ft-long × 20-ft-wide × 4-ft-deep excavated area called the "burn pit" was discovered to be beyond the scope of the intended remediation."

NMED Comment: Clarify the following in the revised Work Plan:

a. Clarify if the wire burn cage (4 ft wide × 4 ft long × 5 ft high) discussed in Section 7.3 is the same structure as the small surface area approximately 4 ft × 4 ft and 6 ft × 6 ft discussed in Section 7.3.1. If these are different areas, the small surface areas discussed in Section 7.3.1 must be depicted in Figure 7.2-2 (Proposed sampling locations for SWMUs 40-004(a) and 40-003(b)) and additional sampling must be proposed or if all contaminants above background values (BV) were removed, state so in the revised Work Plan.

b. Clarify whether the burn pit (12 ft wide × 50 ft long × 12 ft deep) discussed in Section 7.3 is the same burn pit discussed in Section 7.3.1 (A 20-ft-long × 20-ft-wide × 4-ft-deep excavated area called the "burn pit"). If these are separate burn pits, both must be included in Figure 7.2-2 and the Permittees must propose additional sampling locations. If these are the same locations, the Permittees must determine the actual dimensions of the burn pit. In addition, the Permittees must propose pit sidewall sampling.

c. The Permittees state the excavated sites were restored with clean backfill that was compacted and graded to the original contours of the surrounding terrain. Identify by name the excavated sites (e.g., the restored sites are the two small surface areas approximately 4 ft by 4 ft and 6 ft by 6 ft).

87. Section 7.3.3 (Scope of Activities for AOC 40-003(b), page 82:

NMED Comment: Revise the sampling locations to include pit side-wall samples, and ensure the entire extent of the burn pit is being sampled. In addition, the text, Figure 7.2-2, and Table 7.3-1 do not address sampling at the burn cages or along the drainage to Pajarito Canyon. All samples must be collected from below the imported fill. Revise the Work Plan accordingly. See also Comment 86.

88. Section 7.3.3 (Scope of Activities for AOC 40-003(b), page 82:

NMED Comment: Because kerosene was used at the burn cages (Section 7.3), include analysis for diesel range organics (DRO) extended in the analytical suite for all samples associated with the burn cages.

89. Section 7.4 (SWMU 40-004, Storage Area), page 83:

Permittees' Statement: "[t]he information described in the SWMU report is not in the CEARP report, so it is not known how the SWMU report derived its description of the SWMU 40-004 storage area and the products stored there. The RFI work plan states that this storage area is located beneath the southwest wing of building TA-40 (LANL 1993, 026068, p. 5-95); however, no references are provided as to how this information is known."

NMED Comment: The Permittees indicate the Storage Area could potentially be located beneath the southwest wing of building TA-40. Identify building TA-40 in Figure 7.4-2 (Proposed Sampling locations for SWMU 40-004). Indicate whether sampling will be conducted during this investigation, and propose sample locations beneath the building or propose to investigate this area when the building is demolished. Revise the Work Plan accordingly.

90. Section 7.4 (SWMU 40-004, Storage Area), page 83:

NMED Comment: The Permittees describe the location of the Storage Area. Revise the Work Plan to identify the dimensions of SWMU 40-004. Based on the dimensions, additional samples may be required.

91. Section 7.4.3 (Scope of Activities for SWMU 04-004), page 83:

NMED Comment: The Permittees discuss the sample analyses in this section. Because vacuum pump oil was stored in this area and oil stains were observed, analyze for DRO. Revise the Work Plan accordingly.

92. Section 7.5 (SWMU 40-006(a), Firing Site), Section 7.5 (SWMU 40-006(b), Firing Site), and Section 7.7 (SWMU 40-006(c), Firing Site), pages 83-86:

NMED Comment: The Permittees defer investigation of these firing sites per Section IV.A.5.b and Table IV-2 of the Consent Order. This deferral must be stated in the Investigation Report.

93. Section 7.8 (AOC 40-007(a), Storage Area), Section 7.9 (AOC 40-007(b), Storage Area), and Section 7.10 (AOC 40-007(c), Storage Area), pages 86-87:

NMED Comment: The Permittees defer investigation of these Storage Areas after they are removed because they are currently active. State in the Investigation Report that investigations at AOC 40-007(a), AOC 40-007(b), and AOC 40-007(c) will be deferred

until the buildings are removed.

94. Section 7.12 (SWMU 40-009, Landfill), page 88:

Permittees' Statement: "The SWMU report provides only a vague location for the landfill, stating that debris from TA-15 was taken to TA-40 and disposed of in the canyon between buildings 40-5 and 40-15. The RFI investigating field team walked the canyon area between the two buildings and found two prominent earthen berms on the steep hillside directly south of building 40-9 (LANL 1995, 063947). The field team suspected the berms to be the landfill (LANL 1995, 063947)."

NMED Comment: Include the locations of building 40-5 and 40-15 in the Figure 7.12-1 (Site features of SWMU 40-009) and discuss the dimensions (including depth) of the landfill. Revise the Work Plan accordingly.

95. Section 7.12.3 (Scope of Activities for 40-009), pages 88 and Figure 7.12.5 (Proposed sampling locations for SWMU 40-009):

NMED Comment: The Permittees discuss the proposed sampling locations associated with SWMU 40-009. Include the following alternate sample locations:

a. Assuming the width of the landfill is approximately 120 feet, at each side, include two samples 40 and 80 feet from one end of the landfill.

b. Clarify whether samples 9-14 to 9-20 are located at the toe of the colluvium in Pajarito Canyon, or at other locations within the canyon.

96. Section 7.13 (SWMU 40-010, Surface Disposal Area), page 89:

NMED Comment: The Permittees provide a description of SWMU 04-010. Clarify in the revised Work Plan if this SWMU cannot be removed due to archaeological features. In addition, indicate the depth of the disposal area (beneath the pre-Manhattan Project debris).

97. Section 7.13.3 (Scope of Activities for SWMU 40-010), page 89:

NMED Comment: Ensure samples are collected from the bottom of and beneath the Surface Disposal Pit. Based on this information gained from these samples, revisions to the sampling intervals may be necessary. In addition, ensure sampling occurs from the edge of Pajarito Canyon to the toe of the colluvium. Revise the Work Plan accordingly.

98. Section 7.13.3 (Scope of Activities for SWMU 40-010), page 89:

Permittees' Statement: "[t]he area contained various debris, including twenty 30-gallon drums (LANL 1993, 026068, p. 5-56). This area also contains debris from farm and home implements

that predate Manhattan Project activities. Post-Cerro Grande fire activities removed all the drums and exposed debris, with the exception of the pre-Manhattan Project debris, which is considered to be of archaeological importance."

NMED Comment: Because this area was burned in the Cerro Grande Fire, analyze for dioxins/furans. Revise the Work Plan accordingly.

99. Section 8.1 (Establishing Sampling Locations), page 90:

NMED Comment: The Permittees indicate that the proposed locations may be adjusted pending field conditions. Include language in this section that indicates any deviations from the Work Plan (change in proposed sample locations) will be addressed in the investigation report.

The Permittees must address all comments in this NOD and submit a revised Work Plan by or before **January 21, 2011.** As part of the response letter that accompanies the revised Work Plan, the Permittees must include a table that details where all revisions have been made to the revised Work Plan and that cross-references NMED's numbered comments. All submittals (including maps) must be in the form of two paper copies and one electronic copy in accordance with Section XI.A of the Order. The Permittees must submit a redline-strikeout version that includes all changes and edits to the Plan (electronic copy) with the response to this NOD.

Please contact Hope Monzeglio at (505) 476-6045 if you have any questions.

Sincerely,

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File: 2011 LANL, Investigation Work Plan for Upper Water Canyon Aggregate Area (dated August 2010)

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