



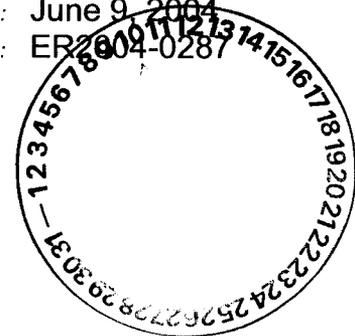
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Date: June 9, 2004  
Refer To: ER 2004-0287



Mr. John Young, Corrective Action Project Leader  
Permits Management Program  
NMED – Hazardous Waste Bureau  
2905 Rodeo Park Drive East  
Building 1  
Santa Fe, NM 87505-6303

**SUBJECT: RESPONSE TO NOTICE OF DEFICIENCY (NOD) COMMENTS  
REGARDING THE SUPPLEMENTAL SAMPLING AND ANALYSIS PLAN  
(SAP) FOR MIDDLE MORTANDAD/TEN SITE AGGREGATE**

Dear Mr. Young:

Enclosed are two copies of the Los Alamos National Laboratory (LANL) Risk Reduction Environmental Stewardship–Remediation Services (RRES–RS) response to the Notice of Deficiency (NOD) regarding the Supplemental Sampling and Analysis Plan (SAP) for Middle Mortandad/Ten Site Aggregate. The NOD was received by the Laboratory on May 11, 2004.

If you have any questions, please contact Gabriela Lopez Escobedo at (505) 665-7352 or David Gregory at (505) 667-5808.

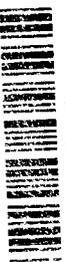
Sincerely,

David McInroy, Deputy Project Director  
Remediation Services  
Los Alamos National Laboratory

Sincerely,

David Gregory, Federal Project Director  
Department of Energy  
Los Alamos Site Operations

RB/th



5327

Enclosures: Certification  
"Supplemental Sampling and Analysis Plan for the Middle Mortandad/Ten  
Site Aggregate" (ER2004-0288)

Cy:(w/enc)

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D. Gregory, LASO, MS A316  
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CERTIFICATION

**CERTIFICATION BY THE RISK REDUCTION AND ENVIRONMENTAL STEWARDSHIP-  
REMEDATION SERVICES (RRES-RS) PROJECT  
TECHNICAL REPRESENTATIVES**

Document Title: **RESPONSE TO NOTICE OF DEFICIENCY (NOD) COMMENTS  
REGARDING THE SUPPLEMENTAL SAMPLING AND  
ANALYSIS PLAN (SAP) FOR MIDDLE MORTANDAD/TEN SITE  
AGGREGATE**

I certify under penalty of law that these documents and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation.

Name: *David McInroy* for  
David McInroy, Deputy Project Director  
Remediation Services  
Los Alamos National Laboratory

Date: 6/10/04

or

\_\_\_\_\_  
Beverly A. Ramsey, Division Leader  
Risk Reduction and Environmental Stewardship Division  
Los Alamos National Laboratory

Date: \_\_\_\_\_

*David R. Gregory*  
David Gregory, Federal Project Director  
Environmental Restoration Program  
Department Of Energy/Los Alamos Site Office

Date: 6/10/04

or

\_\_\_\_\_  
Herman LeDoux,  
Assistant Area Manager of  
Environmental Projects  
Department Of Energy/Los Alamos Site Office

Date: \_\_\_\_\_

**Response to Notice of Deficiency (NOD) Comments  
Regarding the Addendum to the Sampling and Analysis Plan (SAP) for  
Middle Mortandad/Ten Site Aggregate (LA-UR-04-1714; ER2004-0078)**

**INTRODUCTION**

This document responds to a letter whose subject is "Notice of Deficiency for Addendum to SAP for Middle Mortandad/Ten Site Aggregate, Los Alamos National Laboratory, EPA ID No: NM0890010515, HWB-LANL-04-005," dated May 5, 2004, from the New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB) to Los Alamos National Laboratory (LANL) and the US Department of Energy (DOE). To facilitate review of this response, NMED's comments are included verbatim below. LANL's responses follow each NMED comment. In addition, for some comments, revised or "replacement" pages have been prepared; in those cases, the new pages, which are enclosed as Attachment A, are called out below.

**NMED Comment**

1. *Revise the title of the document from "Addendum to SAP for Middle Mortandad/Ten Site Aggregate" to "Supplemental SAP for Middle Mortandad/Ten Site Aggregate."*

**LANL Response**

1. On the title page included with this response, and on the enclosed replacement pages, the title has been changed. The new title page reads, *Supplemental Sampling and Analysis Plan for the Middle Mortandad/Ten Site Aggregate*. The running footers of the replacement pages indicate that the pages are revised; the running headers of those pages carry an abbreviation of the new title. In addition, this response, together with its replacement pages and attachments, has been given a new LA-UR number and a new document catalog number (see revised title page).

**NMED Comment**

2. ***Table 1.0-1, TA-04, TA-05, TA-52, TA-60, and TA-63 SWMUs and AOCs in Middle Mortandad/Ten Site Aggregate, page 3:***  
*Investigations for areas of concern (AOCs) 35-016(g) and 35-016(h) were to be included in the future Addendum according to the Table 1.0-1 of Sampling and Analysis Plan for the Middle Mortandad/Ten Site Aggregate (March 2002, page 10). These sites have not been included in the list of sites to be investigated in the Addendum (Table 1.0-1 of the "Addendum to Sampling and Analysis Plan for the Middle Mortandad/Ten Site Aggregate" (March 2004, page 3). Provide an explanation as to why these sites are not included in the Addendum. NMED may require the Permittees to revise the Addendum to include investigation of these sites in the investigation work plan.*

**LANL Response**

2. AOCs 35-016(g) and 35-016(h) are located within the Upper Mortandad Aggregate and therefore not included in this supplemental SAP. The work for 35-016(g,h) will be included in the "Upper Mortandad Canyon Aggregate Area Investigation Work Plan," which is due to NMED November 30, 2007.

## NMED Comment

### 3. *Table 1.1-1, SWMUs and AOCs in TA-05, TA-52 and TA-63 That Have Received NFA Decisions, page 4:*

- *AOC 05-006(f) has not been approved for a "no further action" by NMED, but is indicated such in the last column of the table, correct the table. Provide references for ER ID numbers 50023, 51501, 59358, 59676, 59972, and 63042, they are not included in the references provided in Section 6.0 of the Sampling and Analysis Plan for the Middle Mortandad/Ten Site Aggregate (SAP) dated March 2002 or the Addendum to "Sampling and Analysis Plan for the Middle Mortandad/Ten Site Aggregate," dated March 2004.*
- *AOCs (i.e. 05-006(d), 05-006(f), 05-006(g), C-05-001, 52-002(g), 52-004 and 63-002), that have not been approved for a "no further action" by NMED, should have been included in this investigation or documentation should have been provided supporting the fact that these sites do not pose unacceptable risk to human health and the environment and that no RCRA concerns exist at these sites. NMED has not evaluated these sites to determine if any RCRA concerns exist at these sites and if these sites should be included in the investigation. NMED does not concur with Permittees position that "non-HSWA" sites do not require NMED approval. Sites that may have released hazardous constituents that may pose a risk to human health or the environment need NMED's review before it can be considered for approval of "no further action." Depending on the Permittees response, the SAP may need to be revised.*

## LANL Response

3. In Table 1.1-1, the ER ID number in the far-right column for AOC 05-006(f) has been changed to N/A (not applicable); the ER ID number should not have been entered in that table cell. The footnote "NMED approval is not required for non-HSWA sites and is not available in all cases" has been removed from Table 1.1-1 (see revised page 4).

Full bibliographic entries for ER ID numbers 50023, 51501, 59358, 59676, 59972, and 63042 have been added to the references section of the document (see revised pages 86 through 89.) Hard copies of these references are also included with this response (Attachment B).

Within section 1.1, the first sentence has been revised to state, "Within the Mortandad Watershed, there are several SWMUs and AOCs located at TA-05, TA-52, and TA-63 that have been recommended, and approved, for no further action (NFA) by the New Mexico Environment Department (NMED) and/or the US Environmental Protection Agency (EPA) or the US Department of Energy (DOE)." (See revised page 4.)

With respect to the seven AOCs identified in NMED's comment, LANL received NFA determinations from EPA for those sites, indicating that Resource Conservation & Recovery Act (RCRA) concerns had been addressed during the period in which EPA was the administrative authority for RCRA corrective action. NMED was given copies of the required work plans and of EPA's responses and approvals. All the relevant documents are included in NMED's administrative record.

#### **NMED Comment**

4. **Table 2.1-1, East Ten Site Slope Subarea SWMUs and AOCs and Their Current Status, page 11:** The last column of the Table 2.1-1 indicates that there are no chemicals of potential concern (COPCs) for solid waste management unit (SWMU) 63-001(b), but the RFI Work Plan for Operable Unit 1129 (LA-UR-92-800, May 1992, page 3-136) states that "...solvents and other chemicals may have been discharged into this system in previous years when this building (formerly TA-0-155) was used as a maintenance shop by group ENG-5 (LANL 1990, 0145)." Explain the discrepancy or revise the text as necessary.

#### **LANL Response**

4. There is no discrepancy in this text. The language in the Operable Unit 1129 work plan was based on what could be present at the site; the COPCs listed in Table 2.1-1 were determined by the results of sampling and analysis and data analysis done for the current document. For clarification, the heading of the column has been changed to "COPCs (As Determined by Data Review)." (See revised pages 10 and 11.)

#### **NMED Comment**

5. **Table 2.2-26, Frequency of Inorganic Chemicals Above BVs in the Sigma Mesa Subarea and Table 2.2-27, Summary of Inorganic Chemical Data review for the Sigma Mesa Subarea, page 45:** Table 2.2-26 indicates that barium and chromium were not detected in any of the sludge samples, but last column of Table 2.2-27 indicates that barium and chromium were detected in sludge samples. Explain the discrepancy.

#### **LANL Response**

5. Table 2.2-27 has been revised to reflect the fact that barium and chromium were not detected in any sludge sample. (See revised pages 45 and 46.)

#### **NMED Comment**

6. **Table 2.4-2, Data Requirements for East Ten Site Slope Subarea, page 59:**

- For SWMU 04-001-99, only one sample was analyzed for semi volatile organic compounds (SVOCs) and volatile organic compounds (VOCs), yet the Table indicates that vertical and lateral extent is defined. Please explain how one sample is sufficient to define the vertical and lateral extent at any site let alone a firing site. In addition, SVOCs are expected contaminants at the firing sites.
- For SWMU 05-001(a)-99 and SMWU 05-001(c), SVOCs analysis should be included, they are expected contaminants at the firing sites.
- For SWMU 52-003(a), only one sample was analyzed for metals, VOCs and SVOCs, yet the table indicates that the lateral extent is defined. Please explain how one sample is sufficient to define the lateral extent of contamination.
- For SWMUs 63-001(a) and SWMU 63-001(b), only three samples were analyzed for metals, SVOCs and VOCs. Samples were collected at three different depths at three different locations. Explain how this data is considered sufficient to define vertical and lateral extent.

## LANL Response

### 6. *First two bullets:*

For SWMUs 04-001-99, 05-001(a)-99, and 05-001(c), SVOC analyses have been added for several sample locations. The number and locations of the additional samples are detailed in the LANL response to NMED comment #8.

Regarding SWMU 04-001-99, on page 57, the fourth paragraph has been revised to include the following text:

*Per the 1992 RFI work plan for OU 1129 (with EPA NOD comments incorporated), every sample collected at SWMUs 04-001 and 04-002 was submitted for the following analyses (verified with sample collection logs): gross alpha/beta/gamma, alpha and gamma spectroscopy, metals (by XRF or ICPES), and HE (field analyses with a subset submitted for fixed-laboratory analysis). Because field analytical data are not used for final corrective action decisions, only the fixed-laboratory data are included in this document and detailed below. For SWMU 04-003(b), each of the nine samples collected was submitted for the following analyses (verified with sample collection logs): gross alpha/beta/gamma, alpha and gamma spectroscopy, metals (by XRF or ICPES), and, per the EPA NOD, every sample was screened for organic contamination (using a PID instrument for VOCs, or chemical van data for SVOCs). VOCs and SVOCs were only to be submitted for laboratory analyses if screening indicated a higher-than-background concentration. If all screening data indicated negative values, at least one sample was submitted to an offsite laboratory to confirm screening data. Nothing was detected in either the sample collected for VOCs or the sample collected for SVOCs, both of which were submitted to confirm screening data. In total, approximately 42 samples were collected from SWMU 04-001-99 and submitted for the various analyses listed above.*

Regarding SWMU 04-001-99, on page 57, the first two sentences of the sixth paragraph have been revised to the following text:

*Each of the nine samples collected at SWMU 04-003(b) were field-screened for organic chemicals. Based on field screening, only one sample was collected for off-site analyses of SVOCs and VOCs at a fixed laboratory; nothing was detected.*

Regarding SWMU 04-001-99, on page 57, the seventh paragraph has been revised to the following text:

*Based on process knowledge and the short 1-yr (1945–1946) use of the firing site, SVOCs and VOCs were not anticipated at this site. Except for adding HE analysis to every sample location (HE analyses were primarily performed in a field laboratory), EPA required no modification to organics analysis per their review of the OU 1129 work plan. Based on results of field analysis, three samples were submitted for offsite analysis of HE; no chemicals were detected. Although SVOCs and VOCs were not anticipated at the site, and HE was not detected, extent is not defined for SVOCs or HE at the locations east of the consolidated SWMU or for the alluvial deposits at the base of the drainage channel leading from this SWMU.*

Regarding SWMU 05-001(a)-99, on page 63, the third paragraph has been revised to the following text:

*Based on process knowledge of the firing site, SVOCs and VOCs were not anticipated at this site. Except for adding HE analysis to every sample location (HE analyses were primarily performed in a field laboratory), EPA required no modification to organics analysis per their review of the OU 1129 work plan. Based on results of field analysis, three samples were submitted for offsite analysis of HE; no chemicals were detected. Although SVOCs and VOCs were not anticipated at the site, and HE was not detected, extent is not defined for SVOCs or HE at SWMUs 05-001(a) and 05-001(b), on the bench, or for the alluvial deposits at the base of the drainage channel leading from these SWMUs.*

Regarding SWMU 05-001(c), on page 63, the seventh paragraph has been revised as follows:

*At least 1 metal was detected at a level greater than its BV in 13 out of 31 samples. Extent is not defined for TAL metals at depth. Based on the process knowledge of the firing site, SVOCs and VOCs were not anticipated at this site. Except for adding HE analysis to every sample location (HE analyses were primarily performed in a field laboratory), EPA required no modification to organics analysis per their review of the OU 1129 work plan. Based on results of field analysis, two samples were submitted for offsite analysis of HE; no chemicals were detected. Although SVOCs and VOCs are not anticipated at the site, and HE was not detected, extent is not defined for SVOCs and HE within the drainage of this SWMU. Additional HE data will also be collected from additional surface samples at this site.*

**Third Bullet:**

SWMU 52-003(a) encompasses the former waste neutralization and pumping facility (TA-52-2) which was removed in 1989 during a D&D of the UHTREX facility. The sampling proposed in the OU 1129 work plan was adequate for determining that the D&D work had been performed. The primary concern was the potential leaking of liquid waste from two concrete waste-holding tanks that were installed in the ground on the north side of the facility. Building TA-52-2 itself was only 14 ft by 31 ft (see Engineering Drawing R-1244). The building occupied an area in which two boreholes would adequately determine vertical extent of potential contamination. The SWMU boundary in which the building was located is very conservative in size within the ERDB and covers a much larger area than the building itself. Lateral extent was evaluated using data from the adjacent 52-002(a). However, Table 2.4-2 has been changed to reflect the fact that additional samples are necessary to further define lateral extent. TAL metals, SVOCs, and VOCs analyses are proposed for BH5 within SWMU 52-003(a). (See revised page 60.)

**Fourth Bullet:**

Regarding SWMUs 63-001(a) and 63-001(b), the proposed analyses in the approved work plan addendum (revised per EPA comments) were gamma and alpha spectrometry, metals by XRF or ICPEES, VOCs, SVOCs, nitrate, nitrite, and total organic carbon for all 32 samples collected from each septic system. Because the majority of the analyses were performed in a field chemical analysis van with detection limits exceeding what is useful for final corrective action decisions, the data were not included in the supplemental SAP. However, the subset of samples that was sent offsite for analyses at a fixed laboratory and that was reported on in the supplemental SAP came either from core intervals where the PID instrument (for VOCs), the XRF reading (for metals), or the chemical van data (for SVOCs) indicated a higher-than-background concentration, or, if all screening data indicated

negative values, from the middle of the 5-ft core from an upper, middle, and lower section of what was considered the potential "leakage" area of the seepage pits.

#### **NMED Comment**

**7. Figure 3.2-2, Proposed sampling locations at TA-05 (west) in the East Ten Site Slope Subarea, page 74:**

*Fix the typographical error, SWMU labeled as 05-001(h) in the Figure should have been labeled 05-006(h).*

#### **LANL Response**

7. The label for SWMU 05-001(h) has been changed to 05-006(h) on the appropriate figures throughout the document. This correction applies to Figures 2.2-3, 3.2-2, C-2a, C-2b, and C-2c. (See revised page 24, revised page 74, and revised Figures C-2a through C-2c.)

#### **NMED Comment**

**8. Table 3.2-1; Proposed Samples for East Ten Site Slope Subarea (TA-04 and TA-05), page 78-79:**

- *For SWMU 04-001-99, SVOC analyses should be included for samples to be collected for AH3 and AH5, and TR1, TR2, TR4, TR5, TR6 and TR7. SVOCs are expected contaminants associated with firing sites. Only one sample was analyzed for SVOCs during 1995 investigation, it is not enough to rule out the presence of SVOCs and to define the extent.*
- *In 1985, during the Los Alamos Site Characterization Program (LASCP) cleanup (that did not address nonradioactive contamination), the firing pit was cleaned, backfilled and contoured. The proposed samples should not be collected from the clean fill, but should be collected from soil/tuff beneath the clean fill to ensure that the vertical extent is defined. The depth of the clean fill is not clear from the document. Samples to be collected from drainages should be collected from the benches or other areas where sediments may have accumulated over time; additional samples should be collected from the upper bench of drainages. For SWMU 04-001-99, two samples analyzed for metals in 1995 were from depths 0-0.5 ft and 2-3 ft and may have been from fill material. Metal analysis should be included for two samples to be collected from AH3 and AH5 to define the vertical extent. High Explosive (HE) analysis should also be included for samples to be collected from AH1, AH2, AH3 and AH5 to define the vertical extent.*
- *For TA-5, SVOC samples should be included in a subset of samples to be collected from AH6, AH7, AH8, AH9, AH10, AH11, AH12, AH13, AH14 and TR9, TR10, TR11, TR13, TR14, TR15 and TR16. SVOCs are potential contaminants associated with firing sites. SVOC analysis were not conducted for any samples collected at SWMU 5-001(a)-99 and SWMU 5-001(c) during 1995 investigation.*
- *Contamination was detected at 15 ft beneath the firing pits in TA-5 during the 1985 LASCP cleanup (only radiological investigation done at that time) and the firing pits were backfilled after the cleanup. Proposed samples to be collected at depths of 3 ft and 6 ft at AH10 may not be able to detect any potential residual contamination at depth because the samples would be collected from the fill material. Samples collected during 1995 investigations, at location ID 05-02056 (at*

*the depth of 20 ft) were from the fill material. Additional samples should be collected from the tuff below the fill material to define the vertical extent.*

## **LANL Response**

### **8. First Bullet:**

For SWMU 04-001-99, SVOC analysis will be included for samples collected at AH3, AH5, TR1, TR2, TR4, TR5, TR6, and TR7. All samples and sample depths are presented in Table 3.2-1 and all samples will be collected below the soil/tuff interface. For information about SWMU 04-001-99 and SVOC analysis, refer to the LANL response to NMED comment #6. (See revised pages 78–79.)

### **Second Bullet:**

For SWMU 04-001-99, TAL metals analysis has been added for samples from AH3 and AH5. HE analysis has been added for AH1, AH2, AH3, and AH5. All samples and sample depths are presented in Table 3.2-1 and all samples will be collected below the soil/tuff interface. (See revised pages 78–79.)

Regarding sample collection of clean fill at SWMU 04-001-99, there was never an intent to sample clean fill; rather the intent was to define the former excavation area from 1985 (10 years earlier).

As explained in the SWMU description, the firing pit area had been cleaned up and backfilled to an *unknown depth*. In addition, the location of the pit was not surveyed for future locating efforts. ER Project personnel performed numerous archival searches, aerial photo reviews, and geographic mapping to determine the former location of the firing pit. Field documentation states,

*Because the original firing pit has been backfilled to an unknown depth, two boreholes will be drilled to a depth of at least 20-ft to assess potential subsurface contamination. Discrete soil samples will be collected at 5-ft intervals. Four of the surface samples will be relocated near the former firing pit where shrapnel has been found.*

All samples described in the supplemental SAP will be collected from below any form of fill material in the tuff; this will be confirmed by a geologist.

### **Third Bullet:**

For TA-5, although SVOCs were not detected in either field chemical or fixed off-site laboratory analyses, SVOC analysis has been added for proposed samples collected at AH6, AH7, AH8, AH9, AH10, AH11, AH12, AH13, AH14, TR9, TR10, TR11, TR13, TR14, TR15, and TR16. Samples will be collected at either 3- and 6-ft depth intervals below the soil/tuff interface (for the auger holes) or at two depths (for the transects), as determined by a geologist. All samples and sample depths are presented in Table 3.2-1 and all samples will be collected below the soil/tuff interface. For information about SWMUs 05-001(a)-99 and 05-001(c) and SVOC analysis, refer to the LANL response to NMED comment #6. (See revised pages 78–79.)

### **Fourth Bullet:**

All proposed samples will be collected from below the soil/tuff interface; this will be confirmed by a geologist. AH10 should have a minimum overlaying depth of fill. The previous surface sample collected at 05-02051, which is co-located with AH10, was collected in soil. The excavated area is located south of AH10.

## NMED Comment

### 9. Section 3.2.1.3, Sample Collection and Analysis, page 80:

*For AOC 52-003(a), borehole BH6 should be indicated as BH5. Fix the typographical error.*

## LANL Response

9. BH6 has been changed to BH5 in the text of section 3.2.1.3. (See revised page 80.)

## NMED Comment

### 10. Table 3.2-2; Proposed Samples for East Ten Site Slope Subarea (TA-52 and TA-63), page 81:

*For SWMU 52-002(a), the extent of contamination is not defined for inorganic and organic chemicals (Table 2.4-2) yet these analyses were not proposed for samples to be collected from BH1, BH2, BH3, TR17, TR18, TR19, and TR20. Only three samples were collected for metals during the previous investigation at random depths and locations (at 9-10 ft at location 52-02006, at 14-15 ft at location 52-02003, and at 19-20 ft at location 52-02001, Table B-2.0-1). Solvents, chemicals and radionuclides were indicated as potential contaminants in the RFI Work Plan for OU 1129 (May 1992, page 3-114). Include SVOC analyses in samples to be collected from TR17, TR18, TR19 and TR20. Only three samples were collected for SVOCs during previous investigation at random depths and locations (at 9-10 ft at location 52-02002, at 14-15 ft at location 52-02003, and at 19-20 ft at location 52-02008, Table B-2.0-1). The data from previous investigations is not adequate to define extent, both lateral and vertical. Include metals and SVOC analysis for a subset of samples to be collected from these boreholes.*

## LANL Response

10. Per an agreement reached at a meeting with NMED on April 30, 2004, SVOC and TAL metals analyses have been added for TR 18 and TR 20. TAL metals analysis has also been added for BH2. SVOC analysis has already been proposed for BH1, BH2, BH3, BH4, and BH5. All samples and sample depths are presented in Table 3.2-2, and will be collected below the soil/tuff interface. (See revised page 81.)

All samples collected from the septic system within SWMU 52-002(a) were analyzed for SVOCs; metals; gross alpha, beta, gamma in a field chemical van. A subset of these samples were submitted for offsite analyses in a fixed laboratory (gamma spectrometry and alpha spectroscopy). The only data gap that remains is in areas where a COPC was detected at depth without decreasing concentrations to depth.

The collected samples were screened for radioactivity with a Geiger-Mueller meter and scintillation detector and screened for VOCs with a PID. Screening measurements were recorded on the field logs. If the surveys indicated the presence of either VOCs above detection limits or radionuclides above background levels, samples were collected from the points with the highest screening readings. If no above-background contamination was detected, either the midpoint of each core interval was sampled (in the case of radionuclides) or no samples were submitted (in the case of organics).

#### **NMED Comment**

**11. Table 3.2-3; Proposed Samples for Sigma Mesa Subarea, page 84:**

*Include polychlorinated biphenyls (PCB) analysis for samples to be collected from AH20 and AH21, as vertical/lateral extent is not defined. Both the samples collected during previous investigations were from 0-1 ft. Transformers that possibly contained PCB contaminated oils were formerly stored at the site.*

#### **LANL Response**

11. PCB analysis has been added to the proposed samples (Table 3.2-3) for AH20 and AH21. Samples will be collected at 2- and 4-ft depths. (See revised page 84.)

#### **NMED Comment**

**12. Section 5.0, Project Management, page 86:**

*Include a schedule of implementation for the Sampling and Analysis Plan for the Middle Mortandad/Ten Site Aggregate.*

#### **LANL Response**

12. See enclosed schedule (Attachment C).

#### **NMED Comment**

**13. Table B-2.0-2, Inorganic Chemicals with Concentrations (mg/kg) or Detection Limits at or Exceeding BVs in East Ten Site Slope Subarea, page B-14 and Figure C-2d, Inorganic chemicals detected above background in sampling locations at TA-05 (east) in the East Ten Site Slope Subarea:**

*Detected value of barium at location 05-02025 at 0-0.5 ft is noted as 4070 mg/kg in Figure C-2d, and as 407 mg/kg in Table B-2-0-2. Clarify the discrepancy and fix the typographical error.*

#### **LANL Response**

13. The concentration of barium shown on Figure C-2d has been changed to 470 mg/kg. (See revised Figure C-2d.) In the original report, Table B-2.0-2 showed a barium concentration of 470 mg/kg.

#### **NMED Comment**

**14. Figure C-3a, Inorganic chemicals detected above background in sampling locations at TA-52:**

*Two separate sampling locations have been labeled by the same number (i.e. 52-02003); revise the figure with location IDs labeled correctly.*

#### **LANL Response**

14. The second point labeled Location ID 52-02003 on Figure C-3a has been changed to Location ID 52-02006. (See revised Figure C-3a.)

**NMED Comment**

**15. Figure C-3c, Radionuclides detected above background in sampling locations at TA-52 in the East Ten Site Slope Subarea:**

*Two separate sampling locations have been labeled by the same number (i.e. 52-02009); revise the figure with location IDs labeled correctly.*

**LANL Response**

15. The second point labeled Location ID 52-02009 on Figure C-3c has been changed to Location ID 52-02010. (See revised Figure C-3c.)

# **Attachment A**

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*Replacement Pages*

LA-UR-04-3716

June 2004

ER2004-0288

*(revision of LA-UR-04-1714, ER2004-0078)*

# **Supplemental Sampling and Analysis Plan for the Middle Mortandad/ Ten Site Aggregate**



Los Alamos NM 87545

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Produced by the  
Risk Reduction and Environmental Stewardship Division—Remediation Services

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The SWMUs and AOCs within the Middle Mortandad/Ten Site Aggregate that lie in TA-50 will *not* be included in this addendum. Instead they will be covered in separate work plans (the TA-50 investigation work plan and the MDA C investigation work plan).

In 1999, SWMU and/or AOC boundaries were re-examined and consolidated according to geographical proximity, similar potential contaminants, and similar fate and transport mechanisms. The consolidated unit boundary is the footprint of the combined SWMUs and/or AOCs. The SWMU/AOC “affected areas” (shown on figures in later sections) are even larger than the SWMU/AOC boundary, as they encompass potential contaminant migration pathways. Table 1.0-1 describes the disposition of each SWMU or AOC in the Middle Mortandad/Ten Site Aggregate that still require investigation. The first column indicates if the SWMU or AOC has been consolidated and, if so, gives the new consolidated unit number. The fifth column indicates the subarea to which each SWMU or AOC has been assigned.

**Table 1.0-1  
TA-04, TA-05, TA-52, TA-60, and TA-63 SWMUs and AOCs in Middle Mortandad/Ten Site Aggregate**

Consolidated Unit Number	SWMU or AOC Number	SWMU or AOC Description	HSWA <sup>b</sup> SWMU	Subarea
04-001-99	04-001	Firing site	Yes	East Ten Site Slope
	04-002	Surface disposal	Yes	East Ten Site Slope
	04-003(b)	Outfall	Yes	East Ten Site Slope
05-001(a)-99	05-001(a)	Former firing site	Yes	East Ten Site Slope
	05-001(b)	Former firing site	Yes	East Ten Site Slope
	05-002	Canyon-side disposal	Yes	East Ten Site Slope
	05-006(h)	Soil contamination	Yes	East Ten Site Slope
N/A <sup>a</sup>	05-001(c)	Former firing site	No	East Ten Site Slope
05-005(a)-00	05-005(a)	Former French drain	Yes	East Ten Site Slope
	05-006(b)	Soil contamination	Yes	East Ten Site Slope
	05-006(e)	Soil contamination	Yes	East Ten Site Slope
N/A	52-002(a)	Septic system	Yes	East Ten Site Slope
N/A	52-003(a)	Waste treatment facility	No	East Ten Site Slope
N/A	52-003(b)	Industrial wasteline	No	East Ten Site Slope
N/A	60-004(c)	Storage area	No	Sigma Mesa
N/A	60-004(e)	Storage area	No	Sigma Mesa
N/A	60-005(a)	Surface impoundment	Yes	Sigma Mesa
N/A	63-001(a)	Septic system	Yes	East Ten Site Slope
N/A	63-001(b)	Septic system	Yes	East Ten Site Slope

<sup>a</sup> N/A = not applicable; the SWMU or AOC in that row has not been consolidated.

<sup>b</sup> HSWA = Hazardous and Solid Waste Amendments of 1984.

Following the implementation of this SAP, the combined data set from the TA-04, TA-05, TA-52, TA-60, and TA-63 investigation and the previous Middle Mortandad/Ten Site Aggregate (TA-35) investigation will be used to evaluate risk at the aggregate scale and make recommendations for future actions. In addition, the data from the Middle Mortandad/Ten Site Aggregate will be integrated with data from other aggregates within the Mortandad Watershed to evaluate cumulative risk and determine final actions for the entire Mortandad Watershed.

### 1.1 Regulatory Framework

Within the Mortandad Watershed, there are several SWMUs and AOCs located at TA-05, TA-52, and TA-63 that have been recommended, and approved, for no further action (NFA) by the New Mexico Environment Department (NMED) and/or the US Environmental Protection Agency (EPA) or the US Department of Energy (DOE). These SWMU/AOC sites were proposed for NFA without sampling per NFA criteria 1 through 3. These SWMUs/AOCs are listed in Table 1.1-1. The NFA criteria are defined as follows:

- NFA Criterion 1—The site does not exist; is a duplicate of another site; cannot be located or is located within another site, or has been or will be investigated as part of that site.
- NFA Criterion 2—The site was never used for the management (that is, the generation, treatment, storage, or disposal) of RCRA solid or hazardous wastes and/or constituents.
- NFA Criterion 3—The site is not known to have released, and is not suspected of releasing, RCRA solid or hazardous wastes and/or constituents to the environment.

The term *release* means any spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of hazardous wastes (including hazardous constituents) into the environment. No further discussion of these NFA-approved SWMUs and AOCs appears in this document.

**Table 1.1-1  
SWMUs and AOCs in TA-05, TA-52, and TA-63 That Have Received NFA Decisions**

SWMU or AOC Number	HSWA SWMU	NFA Criterion Cited in Permit Modification	SWMU or AOC Description	ER ID Number of LANL Request	ER ID Number of DOE Approval	ER ID Number of NMED Approval
05-006(d)	No	Criterion 3	Former building location	56752	51501	N/A <sup>a</sup>
05-006(f)	No	Criterion 3	Former building location	56752	51501	N/A
05-006(g)	No	Criterion 3	Former building location	56752	51501	N/A
C-05-001	No	Criterion 2	Former building location	56752	51501	N/A
52-001(a)	Yes	Criterion 2	UHTREX <sup>b</sup> equipment	59972	59676	63042
52-001(b)	Yes	Criterion 2	UHTREX equipment	59972	59676	63042
52-001(c)	Yes	Criterion 2	UHTREX equipment	59972	59676	63042
52-002(b)	Yes	Criterion 2	Septic system	56752	N/A	63042
52-002(c)	Yes	Criterion 1	Septic system	56752	N/A	63042
52-002(d)	Yes	Criterion 1	Septic system	56752	N/A	63042
52-002(e)	Yes	Criterion 1	Septic tank/seepage pit	56752	N/A	59358
52-002(f)	Yes	Criterion 2	Septic system	56752	N/A	63042
52-002(g)	No	Criterion 2	Septic system	56752	50023	N/A
52-004	No	Criterion 2	Evaporator	56752	50023	N/A
63-002	No	Criterion 3	Container storage area	56752	51501	N/A

<sup>a</sup> N/A = not applicable.

<sup>b</sup> UHTREX = Ultra-High Temperature Reactor Experiment.

TA-52 was home to the historical UHTREX facility which involved the use of high-temperature, gas-cooled reactor technology and the research and development of new fuels. Plans to operate UHTREX with uranium-thorium fuel elements and other fuels with a high yield of fission products did not materialize. UHTREX was used for reactor experiments from 1965 to 1968. Criticality was attained in August 1967, and the reactor operated for about 1 yr (LANL 1992, 07666; LANL 1994, 40252). In 1970, the reactor was shut down and the fuel was removed. In 1989, the contaminated equipment was removed and the building was decontaminated (Salazar and Elder 1992, 12021).

TA-52-02 was the waste neutralization and pumping facility [AOC 52-003(a)] designed for caustic pretreatment of UHTREX liquid acid wastes, to neutralize the wastewater before it was piped via industrial wasteline No. 66 [AOC 52-003(b)] to TA-50, the Laboratory's radioactive liquid waste treatment facility. TA-52-01 also had a septic system [SWMU 52-002(a)] for sanitary waste from the building. The former septic system includes an inactive 2580-gal. septic tank (TA-52-03) and the associated distribution box (TA-52-04) and tile drainfield. These components were installed in 1965 when TA-52-01 was built. The system is located north of TA-52-01, approximately 30 ft north of Puye Road and 10 ft east of TA-52-02. Overflow from the tank flowed to a 300-ft-long tile drainfield trench that splits west and east near the edge of Ten Site Canyon. The septic system has been inactive since 1992 when sanitary wastelines from TA-52-01 were connected to the TA-46 Sanitary Wastewater System Consolidation (SWSC) Plant. Currently, N Division offices and laboratories are housed within TA-52-01 (LANL 1992, 07666; LANL 1994, 40252).

TA-63 includes two inactive sanitary septic systems—TA-63-12, SWMU 63-001(a), and TA-63-14, SWMU 63-001(b)—that formerly served modular office buildings/trailers TA-63-1, TA-63-3, TA-63-4, TA-63-5, and TA-63-6 before the septic systems were removed from service in 1993, at which point the sanitary wastelines from the buildings were connected to the TA-46 SWSC Plant. The area now designated as TA-63 has undergone several redesignations. It was part of TA-04 during the 1950s and part of TA-00 during the 1960s and 1970s. In 1983, nine structures on the site had TA-00 building designations. The site has also been defined as part of TA-52. The western part of TA-52 was redesignated as TA-63 in 1989. The dates of the redesignations from TA-04 to TA-00 and from TA-00 to TA-52 are unknown.

Operational history indicates that, prior to D&D activities, SWMUs and AOCs in the East Ten Site Slope Subarea were a source for natural and depleted uranium, beryllium, cadmium, and lead associated with test shots that were exploded at the firing sites.

The current land use designation for the south slope of Ten Site Canyon is industrial and is expected to remain so for the next 30 yr or more (LANL 1994, 57224). Laboratory employees often use the gravel road which extends along the length of the mesa for recreational activities such as walking or jogging. However, the steep topography of the slope makes recreational or other use by the public unlikely because it is inaccessible. Table 2.1-1 lists the East Ten Site Slope Subarea SWMUs and AOCs (in numeric order), with brief SWMU/AOC descriptions, brief descriptions of remedial activities at a site (if any), and chemicals of potential concern (COPCs) that remain at the site (based on existing data). Detailed descriptions of the East Ten Site Slope Subarea SWMUs and AOCs are presented in Appendix A; existing ER Project RFI data from the subarea SWMUs and AOCs are presented in section 2.2.1 and in Appendix B of this addendum.

Many of the East Ten Site Slope Subarea SWMUs and AOCs have been remediated to some extent and no longer present a source term for contaminant migration. Existing data requirements for the sites within the subarea are primarily related to the extent of contamination at depth on the mesa top (below current or former structures), on the bench, and at the toe of the slope (section 2.4.1).

**Table 2.1-1  
East Ten Site Slope Subarea SWMUs and AOCs and Their Current Status**

SWMU or AOC		SWMU or AOC Description	Current Ground Cover	Description of Source Term Removal	ER Project Confirmatory Sampling <sup>a</sup> Performed?	COPCs <sup>b</sup> (As Determined by Data Review)
04-001-99	04-001	Former 10-ft-square firing pit, TA-04-18	Native grass and soil	The pit was cleaned of all debris, backfilled, and contoured during a 1985 LASCPC cleanup effort; the ground surface was scraped clear of vegetation and topsoil; see Appendix A for more information.	Yes, in 1995	Metals, HE, isotopic plutonium and uranium, gamma-emitting radionuclides
	04-002	Former surface disposal (shot debris from TA-04-18)	Native grass and soil	None	Yes, in 1995	Metals, HE, isotopic plutonium and uranium, gamma-emitting radionuclides
	04-003(b)	Former drainline and outfall from former control building TA-04-03 to Mortandad Canyon	Native grass and soil	The concrete storm drain, electrical conduit, wood and other surface debris, and the drainpipe were removed during the 1985 LASCPC cleanup effort; see Appendix A for more information.	Yes, in 1995	Metals, semivolatile organic compounds (SVOCs), volatile organic compounds (VOCs), isotopic plutonium and uranium
05-001-(a)-99	05-001(a)	Former steel barricade firing pit no. 1 (structure TA-05-07)	Native grass and soil	The site was cleaned of all debris, backfilled, and contoured in 1985 during the LASCPC cleanup effort; see Appendix A for more information.	Yes, in 1995	Metals, HE, isotopic plutonium and uranium, gamma-emitting radionuclides
	05-001(b)	Former steel barricade firing pit no. 2 (structure TA-05-15)	Native grass and soil	The site was cleaned of all debris, backfilled, and contoured in 1985 during the LASCPC cleanup effort; see Appendix A for more information.	Yes, in 1995	
	05-002	Canyon-side disposal site created by bulldozing shot debris from firing pits no. 1 and 2	Native grass, soil, shot debris, cables, and wire debris	During 1985 LASCPC activities, visible-surface shot debris was removed, but the canyon side was not monitored or decontaminated for radioactivity; see Appendix A for more information.	No, only Phase I RFI sampling	
	05-006(h)	Soil contamination at former X-chamber building TA-05-09	Native grass and soil	Radioactively contaminated soil was removed by the former Health, Safety and Environment group (HSE-3) in 1985 during the LASCPC cleanup effort; see Appendix A for more information.	Yes, in 1995	
05-001(c)	Former firing site known as Far Point	Native grass and soil	Cable and a pile of gravel at the east end of TA-05 were removed and taken to TA-54 during the 1985 LASCPC cleanup effort; see Appendix A for more information.	Yes, in 1995	Metals, isotopic plutonium and uranium	

Table 2.1-1 (continued)

SWMU or AOC	SWMU or AOC Description	Current Ground Cover	Description of Source Term Removal	ER Project Confirmatory Sampling <sup>a</sup> Performed?	COPCs <sup>b</sup> (As Determined by Data Review)	
05-005(a)-00	05-005(a)	French drain from former control building TA-05-04 (both removed)	Native grass and soil	The control building was removed in 1960 and the French drain and affected soil were removed in 1985 during the LASCPC D&D; see Appendix A for more information.	Yes, in 1995	Metals, SVOCs, VOCs, HE, isotopic plutonium and uranium, gamma-emitting radionuclides
	05-006(b)	Soil contamination at former location of TA-05-04	Native grass, soil, and quartz gravel	The site was cleaned of all debris, backfilled, and contoured in 1985 during the LASCPC cleanup effort; see Appendix A for more information.	Yes, in 1995	
	05-006(e)	Soil contamination from former wood platform (structure TA-05-19)	Native grass, soil, and wood fragments	The entire area was razed when TA-05-04 was removed in 1985 during the LASCPC cleanup effort; see Appendix A for more information.	Yes, in 1995	
52-002(a)	Former sanitary septic system (septic tank TA-52-3 and distribution box TA-52-4) that served TA-52-01	Native grass and soil	The septic system was left in place in 1992 when TA-52-01 was connected to the TA-46 SWSC Plant.	No, only Phase I RFI sampling	Metals, SVOCs, VOCs, isotopic plutonium and uranium, gamma-emitting radionuclides, strontium-90, tritium	
52-003(a)	Soil contamination below former industrial waste treatment facility TA-52-02	Native grass and soil	The building was removed during the D&D of the UHTREX facility in 1989 (Salazar and Elder 1992, 12021).	Yes, in 1995		
52-003(b)	Industrial wastelines 65 and 66 from TA-52-01	Native grass and soil	The wasteline was removed during the D&D of the UHTREX facility in 1989 (Salazar and Elder 1992, 12021).	No ER Project RFI data	Metals, VOCs, isotopic plutonium and uranium, gamma-emitting radionuclides, strontium-90, tritium	
63-001(a)	Former sanitary septic system (septic tank TA-63-12 and a seepage pit formerly designated as structure 52-50)	Native grass and soil	The septic system was left in place in 1992 when TA-52-01 was connected to the TA-46 SWSC Plant.	No, only Phase I RFI sampling	None	
63-001(b)	Former sanitary septic system (septic tank TA-63-14 and a seepage pit formerly designated as structure 00-462)	Native grass and soil	The septic system was left in place in 1992 when TA-52-01 was connected to the TA-46 SWSC Plant.	No, only Phase I RFI sampling	None	

<sup>a</sup> For ER Project RFI data, see table of samples collected (Appendix B).

<sup>b</sup> COPCs = chemicals of potential concern.

### 2.1.1.1 Neighboring Influences to the East Ten Site Slope Subarea

#### 2.1.1.1.1 TA-35

The original Ten Site laboratory building (TA-35-2) was constructed in 1951. Through the 1970s, the principal activities at TA-35 were associated with developing radioactive lanthanum sources for weapons testing and research involving various radionuclides, particularly plutonium and tritium (LANL 1992, 07666). Wastewater associated with these activities was processed at the TA-35 wastewater treatment facility until 1963, at which time TA-35 industrial wastewater was piped to the Laboratory's centralized wastewater facility at TA-50. During the 1970s, research activities at TA-35 shifted to laser technology, optics, and nuclear safeguards. These latter activities continue at TA-35 to the present day.

Documented releases of contamination to the environment are associated with

- the variety of industrial operational activities listed above, and the drainlines and outfalls that handled wastewater, stormwater, and cooling water;
- tanks and structures used to store dielectric oils for the laser facilities;
- sanitary septic systems;
- container storage areas; and
- mesa-top areas used for debris disposal.

Therefore, the Mesa Top Subarea of TA-35 may contain a variety of inorganic, organic, and radiological COPCs as a result of Laboratory operations. These COPCs may have traveled via outfalls and stormwater runoff to Ten Site Canyon. The former TA-35 wastewater treatment plant is a potential source of residual subsurface contamination, especially radionuclides, at the east end of the mesa top. Oil spills may have contributed a number of organic chemicals, including polyaromatic hydrocarbons (PAHs), phthalates, polychlorinated biphenyls (PCBs), and total petroleum hydrocarbons (TPH), where surface water runoff may have carried COPCs to Ten Site Canyon. Portions of the mesa top may have also received radionuclide contamination, including tritium and plutonium, from stack emissions that took place at Building 35-2 between 1954 and 1979. These surface COPCs may have contaminated Ten Site Canyon via surface water runoff.

#### 2.1.1.1.2 TA-50

Before 1975, outfalls from TA-50 (other than the Radioactive Liquid Waste Treatment Facility [RLWTF] outfall to Effluent Canyon) discharged into the head of Ten Site Canyon via drainlines 55 and 67, which originated in Buildings 50-01 and 50-02, respectively. In 1974, two unplanned discharges of untreated wastes occurred due to an overflowing sump at TA-50-02. The radionuclide activities released are unknown. Drainline 67 was sealed with a flexible plug in February 1975. Both drainlines were completely removed in 1981. The COPCs encountered during the removal were primarily cesium-137, plutonium-239, ruthenium-106, strontium-89, strontium-90, and yttrium-90. In 1976, soil samples collected near the outfalls contained up to 50,000 pCi/g gross alpha activity. However, early 1990s sampling in Ten Site Canyon found that only 1 of 27 samples contained gross alpha activity greater than 20 pCi/g. When the area was partially decontaminated in 1981, approximately 70 m<sup>3</sup> of soil were removed from the outfall locations. After decontamination, the maximum soil activities observed near the outfall were 400 pCi/g gross alpha and 40 pCi/g gross beta (Elder et al. 1986, 03089).

According to Laboratory RRES-RS guidance (LANL 2000, 71233), the eight gamma-emitting radionuclides that are retained and evaluated in data review are americium-241, cesium-134, cesium-137, cobalt-60, europium-152, ruthenium-106, sodium-22, and uranium-235. This list represents radionuclides that are potential historical contaminants, have half-lives greater than 1 yr, and are reliably measured by gamma spectroscopy. Of the eight gamma-emitting radionuclides, all but cesium-137 and europium-152 were detected in the soil and/or fill samples.

Table 2.2-6 summarizes the radionuclides that were detected at TA-04 above BVs, or that were detected and for which there are no associated BVs. For a list of specific samples and details, see Appendix B.

**Table 2.2-6  
Summary of Radionuclide Data Review for TA-04**

Analyte	Comparison to BVs for Soil		Comparison to BVs for Fill		Comparison to BVs for Tuff	
	Not detected above BV, or not detected if BV is not available	Detected above BV, or detected if BV is not available	Not detected above BV, or not detected if BV is not available	Detected above BV, or detected if BV is not available	Not detected above BV, or not detected if BV is not available	Detected above BV, or detected if BV is not available
Americium-241		•			•	
Cesium-134		•			•	
Cesium-137	•				•	
Cobalt-60		•			•	
Europium-152	•				•	
Plutonium-238		•	•			•
Plutonium-239		•	•		•	
Ruthenium-106		•			•	
Sodium-22		•			•	
Uranium-234		•	•		•	
Uranium-235		•	•		•	
Uranium-238		•	•		•	

### 2.2.1.2 TA-05

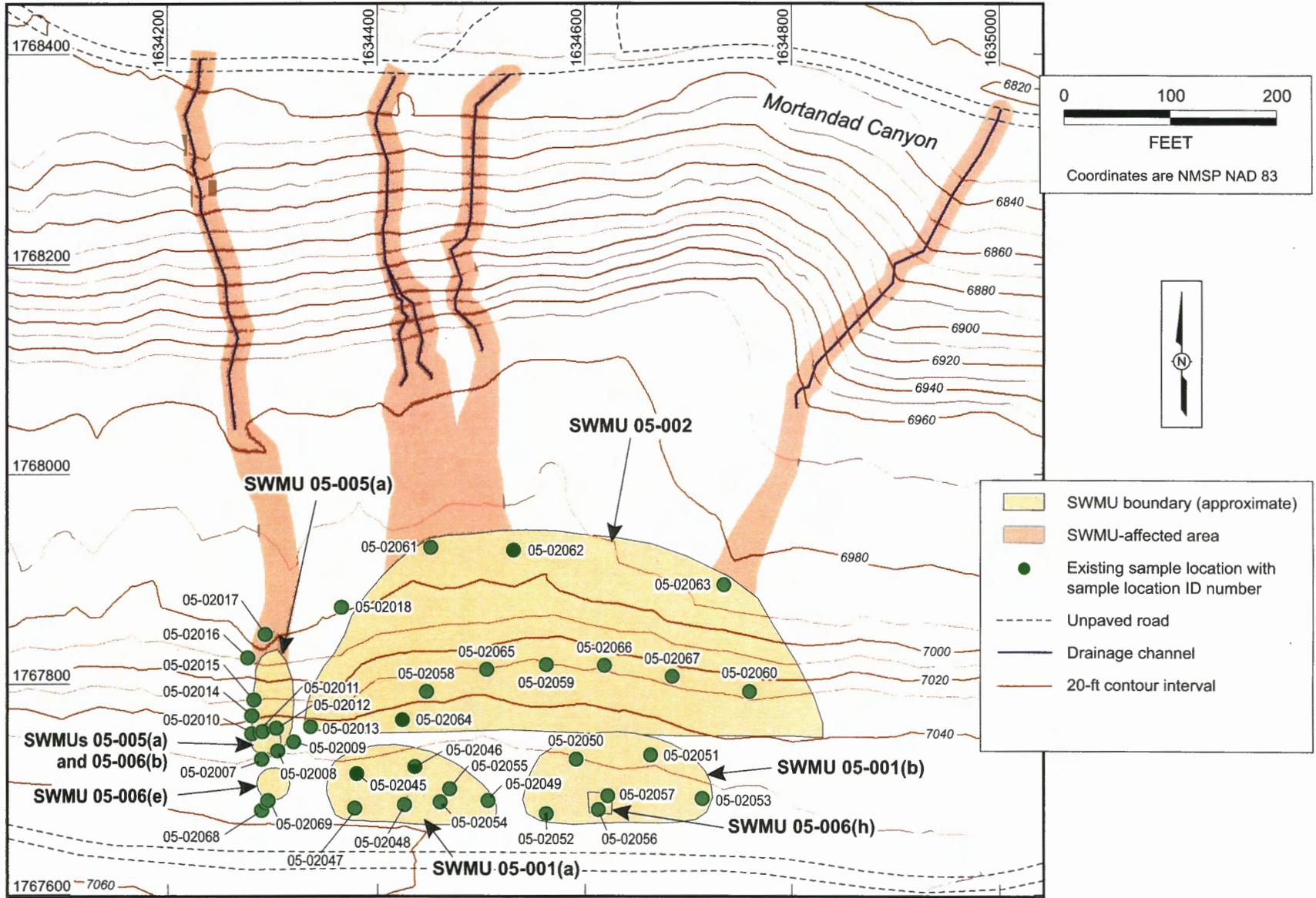
#### 2.2.1.2.1 Samples Collected at TA-05

The samples collected at TA-05 were analyzed for the chemical suites listed in Table 2.2-7. Sample locations are shown on Figures 2.2-3 and 2.2-4. Because of the spatial scale, the figures displaying the SWMUs/AOCs within TA-05 were divided into east and west areas. Complete lists of the samples collected and the analytical suites for which each sample was analyzed can be found in Appendix B.

**Table 2.2-7  
Number of Samples Analyzed at TA-05**

Analyte	Media Sampled			
	Soil	Sediment	Fill	Qbt 3
TAL Metals	30	—*	20	20
HE	2	—	1	3
SVOCs	—	—	2	1
VOCs	—	—	2	1
Gamma spectroscopy	5	—	3	—
Isotopic plutonium	45	2	33	27
Isotopic uranium	45	2	33	27

\* — = Not sampled in this medium.



Source: R.L. Budd (RRES db), Map #05, 102703  
Rev. for F2.2-3, NOD for TA-35 ISAP Addendum, 051304, lbi

Figure 2.2-3. Existing sampling locations at TA-05 (west) in the East Ten Site Slope Subarea

Table 2.2-26 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	BV (mg/kg)	Frequency of Detects, or Detects Above BV	Frequency of Non-detects Above BV
Antimony	Fill	6	0	[0.55 to 3.7]	0.83	0/6	4/5
Arsenic		6	0	[0.78 to 4.2]	8.17	0/6	0/5
Barium		6	2	[37.9 to 146]	295	0/6	0/5
Beryllium		6	0	[0.39 to 1.3]	1.83	0/6	0/5
Cadmium		6	0	[0.06 to 0.41]	0.4	0/6	1/5
Chromium		6	1	[0.85 to 3.2]	19.3	0/6	0/5
Lead		6	6	3.8 to 14.7	22.3	0/6	0/5
Nickel		6	0	[0.95 to 5.2]	15.4	0/6	0/5
Selenium		6	0	[0.88 to 6]	1.52	0/6	3/5
Silver		6	0	[0.09 to 0.62]	1	0/6	0/5
Thallium		6	0	[0.85 to 5.8]	0.73	0/6	5/5
Antimony		SLD <sup>a</sup>	4	0	[0.41 to 10.3]	NA <sup>b</sup>	0/4
Arsenic	4		0	[1.7 to 8.7]	NA	0/4	n/a
Barium	4		0	59 to [194]	NA	0/4	n/a
Beryllium	4		0	[0.34 to 3.3]	NA	0/4	n/a
Cadmium	4		0	[0.05 to 1.3]	NA	0/4	n/a
Chromium	4		0	[1.7 to 8.5]	NA	0/4	n/a
Cyanide (Total)	1		0	10.7	NA	0/1	n/a
Lead	4		4	5.6 to 34	NA	4/4	n/a
Nickel	4		0	[3.3 to 9.9]	NA	0/4	n/a
Selenium	4		0	[0.66 to 16.6]	NA	0/4	n/a
Silver	4		0	[0.07 to 1.7]	NA	0/4	n/a
Thallium	4		0	[0.64 to 16]	NA	0/4	n/a

<sup>a</sup> SLD represents sludge samples; there are no background comparisons for sludge.

<sup>b</sup> NA = not available.

<sup>c</sup> n/a = not applicable.

Table 2.2-27  
Summary of Inorganic Chemical Data Review for the Sigma Mesa Subarea

Analyte	Comparison to BVs for Soil			Comparison to BVs for Fill			Comparison to BVs for Sludge		
	Not detected above BV, or not detected if BV is not available	Reporting limits above BV	Detected above BV, or detected if BV is not available	Not detected above BV, or not detected if BV is not available	Reporting limits above BV	Detected above BV, or detected if BV is not available	Not detected above BV, or not detected if BV is not available	Reporting limits above BV	Detected above BV, or detected if BV is not available
Aluminum	•								
Antimony	•	•	•				•		
Arsenic	•			•			•		
Barium	•			•			•		
Beryllium	•			•			•		
Cadmium		•	•	•			•		

Table 2.2-27 (continued)

Analyte	Comparison to BVs for Soil			Comparison to BVs for Fill			Comparison to BVs for Sludge		
	Not detected above BV, or not detected if BV is not available	Reporting limits above BV	Detected above BV, or detected if BV is not available	Not detected above BV, or not detected if BV is not available	Reporting limits above BV	Detected above BV, or detected if BV is not available	Not detected above BV, or not detected if BV is not available	Reporting limits above BV	Detected above BV, or detected if BV is not available
Calcium	•								
Chromium	•			•			•		
Cobalt	•								
Copper	•								
Cyanide (Total)	•						•		
Iron	•								
Lead	•			•					•
Magnesium	•								
Manganese	•								
Mercury	•								
Nickel	•			•			•		
Potassium	•								
Selenium		•	•	•			•		
Silver	•			•			•		
Sodium	•								
Thallium		•	•	•			•		
Vanadium	•								
Zinc	•								

### 2.2.2.3 Evaluation of Organic Chemicals Detected in the Sigma Mesa Subarea

Fourteen soil samples, two sludge samples, and six fill samples were analyzed for SVOCs. Seven soil samples and seven fill samples were analyzed for VOCs.

For fill, acetone, [2-]butanone, butylbenzylphthalate, [2-]hexanone, [4-]methyl-2-pentanone, toluene, and xylene were detected in one or two samples.

Table 2.2-28 presents the concentration range and frequency of detects for these analytes. For a list of specific samples with detected organic chemicals and sample details, see Appendix B.

**Table 2.2-28**  
**Frequency of Detected Organic Chemicals in the Sigma Mesa Subarea**

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range (mg/kg)	Frequency of Detects
Acetone	Fill	2	2	0.47 to 0.95	2/2
Butanone[2-]		2	2	0.24 to 0.31	2/2
Butylbenzylphthalate		5	1	[0.5] to 4.4	1/5
Hexanone[2-]		2	2	0.2 to 0.5100001	2/2
Methyl-2-pentanone[4-]		2	2	0.041 to 0.079	2/2
Toluene		2	1	[0.012] to 0.015	1/2
Xylene (Total)		2	1	[0.012] to 0.035	1/2

In this document, any sample taken “at depth” represents the deepest sample collected from that sample location. A data need exists when a COPC has been detected at depth and yet no data exist from surrounding sample locations at the same or deeper sample intervals in order to confirm that extent has been defined.

If process knowledge determined that a COPC would not be present at a site, and no analysis was performed, no additional data are required.

Table 2.4-2, “Data Requirements for the East Ten Site Slope Subarea,” summarizes the information that is presented below.

**SWMU 04-001-99** consists of SWMU 04-001, a former firing pit; SWMU 04-002, a former surface disposal site; and SWMU 04-003(b), a former drainline and outfall (see Appendix A for a detailed description of the SWMUs). ER Project activities occurred at these SWMUs during 1994 and 1995. Per the 1992 RFI work plan for OU 1129 (with EPA NOD comments incorporated), every sample collected at SWMUs 04-001 and 04-002 was submitted for the following analyses (verified with sample collection logs): gross alpha/beta/gamma, alpha and gamma spectroscopy, metals (by XRF or ICPES), and HE (field analyses with a subset submitted for fixed-laboratory analysis). Because field analytical data are not used for corrective action decisions, only the fixed-laboratory data are included in this document and detailed below. For SWMU 04-003(b), each of the nine samples collected was submitted for the following analyses (verified with sample collection logs): gross alpha/beta/gamma, alpha and gamma spectroscopy, metals (by XRF or ICPES), and, per the EPA NOD, every sample was screened for organic contamination (using a PID instrument for VOCs, or chemical van data for SVOCs). VOCs and SVOCs were only to be submitted for laboratory analyses if screening indicated a higher-than-background concentration. If all screening data indicated negative values, at least one sample was submitted to an offsite laboratory to confirm the screening data. Nothing was detected in either the sample collected for VOCs or the sample collected for SVOCs, both of which were submitted to confirm screening data. In total, approximately 42 samples were collected from SWMU 04-001-99 and submitted for the various analyses listed above.

In one sample, chromium was detected at a level greater than the BV from a 2- to 3-ft depth; no other metals were detected at levels greater than BVs in the four samples collected. Extent is not defined for TAL metals in alluvial deposits, or for the location with detected chromium at depth.

Each of the nine samples collected at SWMU 04-003(b) were field-screened for organic chemicals. Based on field screening, only one sample was collected for off-site analyses of SVOCs and VOCs at a fixed laboratory; nothing was detected. However, to determine if SVOCs migrated downslope, SVOC data are required from the alluvial deposit(s) at the base of the drainage channel leading from this SWMU. Acetone was detected in the one sample collected; VOC data are required at an additional depth below the detected chemical and from the alluvial deposit(s) at the base of the drainage channel leading from this SWMU.

Based on process knowledge and the short 1-yr (1945–1946) use of the firing site, SVOCs and VOCs were not anticipated at this site. Except for adding HE analysis to every sample location (HE analyses were primarily performed in a field laboratory), EPA required no modification to organics analysis per their review of the OU 1129 work plan. Based on results of field analysis, three samples were submitted for offsite analysis of HE; no chemicals were detected. Although SVOCs and VOCs were not anticipated at the site, and HE was not detected, extent is not defined for SVOCs or HE at the locations east of the consolidated SWMU or for the alluvial deposits at the base of the drainage channel leading from this SWMU.

Plutonium-238, -239 were detected in 7 out of 42 samples, with 2 detected concentrations greater than BVs. Sample location 04-02013 has the higher of the two values detected (plutonium-239 at 98 pCi/g); however, plutonium-239 is not detected in the sample collected immediately below this surface sample at the same location. Uranium-234, -235, -238 were detected at concentrations greater than BVs in 6 out of 42 samples. Extent is not defined for the bench, the toe of the slope, or other locations where the detected (greater-than-BV) sample has no deeper sample interval nearby to confirm extent. Gamma-emitting radionuclides (cobalt-60, ruthenium-102, sodium-22) were detected in 1 of the 4 samples collected. Cesium-137 was detected in 3 out of 4 samples but not above BV. Extent is not defined for the bench, alluvial deposits, or other locations where cobalt-60, ruthenium-102, or sodium-22 were detected.

To complete the data set for assessment, as shown in Table 2.4-2, "Data Requirements for East Ten Site Slope Subarea," SWMU 04-001-99 needs additional data for TAL metals, SVOCs, VOCs, HE, isotopic plutonium, isotopic uranium, and gamma spectroscopy analyses.

**Table 2.4-2  
Data Requirements for East Ten Site Slope Subarea**

Consolidated Unit Number, Individual SWMU Number, and Description	Inorganics				Organics								Radionuclides						Data Needs Conclusion																				
	Metals				SVOCs				VOCs				HE				Alpha/Beta			Gamma			Checked categories have detected constituents whose extent has not been defined																
	COPCs expected at SWMU?	Number of fixed-laboratory samples	> BV or detected?	Vertical extent defined?	Lateral extent defined?	COPCs expected at SWMU?	Number of fixed-laboratory samples	> BV or detected?	Vertical extent defined?	Lateral extent defined?	COPCs expected at SWMU?	Number of fixed-laboratory samples	> BV or detected?	Vertical extent defined?	Lateral extent defined?	COPCs expected at SWMU?	Number of screening <sup>a</sup> samples	Number of fixed-laboratory samples	> BV <sup>b</sup> or detected?	Vertical extent defined?	Lateral extent defined?	COPCs expected at SWMU?	Number of screening samples	Number of fixed-laboratory samples	> BV or detected?	Vertical extent defined?	Lateral extent defined?	Metals	SVOCs and/or VOCs	HE	Isotopic Plutonium and/or Uranium	Gamma Spectroscopy	Strontium 90	Tritium					
04-001-99 04-001, 04-002, 04-003(b), firing site, surface disposal, outfall	Y	4	1	N	N	U	1	N	N	N	U	1	1	N	N	Y	3	N	N	N	Y	4	42	7	N	N	Y	2	4	Y	N	N	✓	✓	✓	✓	✓	—	—
	Chromium was detected at 9.61 ppm in 1 Qbt 3 sample at 2- to 3-ft depth. No additional data exist at a deeper depth.				No SVOCs were detected.				Acetone was detected at 0.004 ppm and J-flagged.				No HE components were detected.				Four detects of gross alpha/beta were noted in the 4 samples screened; 2 of the screened locations had no associated plutonium or uranium detects. Plutonium-238, -239 was detected in a total of 7 samples, only 2 of the 7 samples were > BV. All 6 detects of uranium (-234, -235, or -238) were > BV in surface soil (0-0.5 ft) with decreasing values at the 1 location with 2 depths.						Gross gamma was noted in 1 of the 2 screened samples, although not associated with any gamma spec. detect. Americium-241, cesium-134, cobalt-60, ruthenium-106, and sodium-22 were all detected in 1 surface sample (Location ID 04-02021); americium-241 is the only detected COPC with a BV.						Extent is not defined for TAL metals in alluvial deposits and the location with detected chromium (only 1 sample depth was collected); for SVOCs and HE on the mesa top, on the bench, and alluvial deposits; plutonium and uranium for the bench, the toe of the slope, and other locations where the detected COPCs are at depth; for VOCs within 04-003(b); for gamma-emitting radionuclides for the bench, alluvial deposits, and other locations where detected COPCs are at depth.										
05-001(a)-99 05-001(a), 05-0-01(b), 05-002, 05-006(h), former firing site(s), canyon-side disposal, soil contamination	Y	29	29	N	N	N	0	—	—	—	N	0	—	—	—	Y	3	N	N	N	Y	3	47	30	N	N	Y	0	3	N	N	N	✓	✓	✓	✓	✓	—	—
	At least 1 metal was detected in every sample. Barium, cadmium, copper, lead, and zinc were detected in surface soils and fill (0- to 0.5-ft depth). Location ID 05-02054 and -02055 had detects of several metals at shallow depths but nothing deeper (to 19-20 ft) except nickel in 1 sample and antimony which remained constant at all depths (~0.6 ppm).				No analysis was conducted for SVOCs, based on process knowledge.				No analysis was conducted for VOCs, based on process knowledge.				No HE components were detected.				Three detects of gross alpha/beta were noted in the 3 samples screened, associated with uranium detects. Plutonium-238, -239 was detected in a total of 3 samples, only 1 of the 3 samples was > BV. Uranium (-234, -235, or -238) was detected in a total of 29 samples, with decreasing values or values < BV at locations with multiple depths (but not below BV).						No gamma-emitting radionuclides were detected.						Extent is not defined for TAL metals in alluvial deposits and locations with detected metals at depth; for HE for the footprint of SWMUs 05-001(b) and 05-006(h), on the bench, and in alluvial deposits; for plutonium and uranium for the bench, alluvial deposits, and other locations where the detected samples are greater than BV at depth; for gamma-emitting radionuclides for the bench and alluvial deposits. Data should be collected for SVOCs to determine presence/absence of potential contaminants.										
05-001(c), former firing site	Y	31	13	N	Y	N	0	—	—	—	N	0	—	—	—	Y	2	0	Y	Y	Y	2	31	15	N	Y	Y	2	2	N	Y	Y	✓	—	✓	✓	—	—	—
	Antimony, barium, chromium, copper, lead, nickel, and zinc were detected in at least 1 of 13 samples. Copper and lead were detected the most. Copper was detected at higher concentrations at deepest depth at 2 locations (05-02026 and -02030). Chromium and nickel decreased with depth at Location ID 05-02030, and antimony and chromium decreased with depth at Location ID 05-02031.				No analysis was conducted for SVOCs, based on process knowledge.				No analysis was conducted for VOCs, based on process knowledge.				No HE components were detected.				Two detects of gross alpha/beta were noted in the 2 samples screened, neither associated with uranium or plutonium detects. Plutonium-238 was detected in 10 samples, only 2 of the 10 were in soil and could be compared to BVs, which they were slightly above. Plutonium-239 was detected in 1 Qbt 3 sample. Uranium (-234, -235, or -238) was detected in a total of 6 samples with decreasing values or values < BV at locations with multiple depths.						No gamma-emitting radionuclides were detected.						Extent is not defined for TAL metals at depth, for HE laterally, and for plutonium and uranium at depth. Data should be collected for SVOCs to determine presence/absence of potential contaminants.										

Table 2.4-2 (continued)

Consolidated Unit Number, Individual SWMU Number, and Description	Inorganics					Organics										Radionuclides										Data Needs Conclusion													
	Metals					SVOCs					VOCs					HE					Alpha/Beta					Gamma					Checked categories have detected constituents whose extent has not been defined								
	COPCs expected at SWMU?	Number of fixed-laboratory samples	> BV or detected?	Vertical extent defined?	Lateral extent defined?	COPCs expected at SWMU?	Number of fixed-laboratory samples	> BV or detected?	Vertical extent defined?	Lateral extent defined?	COPCs expected at SWMU?	Number of fixed-laboratory samples	> BV or detected?	Vertical extent defined?	Lateral extent defined?	COPCs expected at SWMU?	Number of fixed-laboratory samples	> BV or detected?	Vertical extent defined?	Lateral extent defined?	COPCs expected at SWMU?	Number of screening <sup>a</sup> samples	Number of fixed-laboratory samples	> BV <sup>b</sup> or detected?	Vertical extent defined?	Lateral extent defined?	COPCs expected at SWMU?	Number of screening samples	Number of fixed-laboratory samples	> BV or detected?	Vertical extent defined?	Lateral extent defined?	Metals	SVOCs and/or VOCs	HE	Isotopic Plutonium and/or Uranium	Gamma Spectroscopy	Strontium 90	Tritium
05-005(a)-00 05-005(a), 05-006(b), 05-006(e), former French drain, soil contamination	Y	10	6	N	N	U	3	2	N	N	U	3	Y	N	Y	Y	1	0	N	N	Y	3	29	2	N	N	U	3	3	N	N	N	✓	✓	✓	✓	✓	—	—
	Cadmium, chromium, copper, lead, and mercury were detected in at least 1 of 6 samples. Chromium was detected in only the deepest sample (5-6 ft) at Location ID 05-02007. All other detects were in surface soil or fill material.					Fluoranthene and pyrene were detected in 1 sample at Location ID 05-02010 (fill material, 1- to 2-ft depth); no detects from the deeper intervals nearby.					Toluene was detected in 3 samples; 2 of the 3 at the deepest depths of fill material (5-6 ft) at Location IDs 05-02007 and -02011, and 1 from the 1- to 2-ft depth at Location ID 05-02013.					No HE components were detected.					Three detects of gross alpha/beta were noted in the 3 samples screened, all associated with either a uranium or plutonium detect. Plutonium-238, -239 were detected in 3 samples, only 2 of the 3 samples were > BVs. Uranium (-234 or -238) was detected in 5 samples (4 locations) with decreasing values or values < BV at 2 locations with multiple depths.					No gamma-emitting radionuclides were detected.					Extent is not defined for TAL metals in alluvial deposits and nearby location (05-02010) at depth; for toluene (VOC) at depth, and SVOCs and VOCs on the mesa top, in alluvial deposits and on bench; for HE for locations with detects at depth, on the bench, and in alluvial deposits; for plutonium and uranium for the bench, alluvial deposits, and other locations where the detected samples are greater than BVs at depth; for gamma-emitting radionuclides for the bench and alluvial deposits.								
52-002(a), septic system	Y	3	3	N	N	U	3	1	N	N	U	3	N	N	N	N	0	—	—	—	U	3	26	15	N	N	U	3	3	N	Y	N	✓	✓	—	✓	✓	✓	✓
	Lithium, molybdenum, and strontium metals were detected in up to 3 samples; the highest value was 5 ppm. BVs for these metals are not available.					Butylbenzylphthalate and di-n-butylphthalate were detected in 1 sample from the 9- to 10-ft depth. SVOC analyses were not performed on the deeper intervals at this location.					No VOCs were detected.					No analysis was conducted for HE, based on process knowledge.					Three detects of gross alpha/beta were noted in the 3 samples screened, 2 of the samples are associated with detected plutonium-238. Plutonium-238 was detected in 15 samples (14 in Qbt 3, which has no BV), 1 detected (fill) sample was > BV. Plutonium-239 was detected in 2 samples in Qbt 3 which has no BV. Uranium was not detected.					Three detects of gross gamma were noted in the 3 samples screened; however, gamma spec. analysis of fixed-laboratory samples that were taken at the same locations did not detect anything.					Extent is not defined for TAL metals, SVOCs, and gamma spectroscopy at most locations, for VOCs at location 52-02008; for metals, SVOCs, gamma spectroscopy, isotopic plutonium, and uranium in alluvial deposits; for strontium-90 and tritium from alluvial deposits and around the tile drainfield.								
52-003(a), waste treatment facility	Y	1	1	N	N	U	1	1	N	N	U	1	1	N	N	N	0	—	—	—	U	1	9	9	N	Y	U	1	1	N	N	Y	✓	✓	—	✓	✓	✓	✓
	Strontium was detected in the one sample collected at 3.2 ppm (19- to 20-ft depth); a BV for strontium metal is not available.					Bis(2-ethylhexyl)phthalate and di-n-butylphthalate were detected in the 1 sample collected (9- to 10-ft depth).					Methylene chloride was detected in the only VOC sample collected from the 14- to 15-ft depth.					No analysis was conducted for HE, based on process knowledge.					One detect of gross alpha/beta was noted in the 1 sample screened which is associated with detected plutonium-238. Plutonium-238 was detected in all 9 samples at values slightly > BV in fill (Qbt 3 does not have a BV). A decreasing trend was noted from the 15- to 20-ft interval. Plutonium-239 was detected in 1 Qbt 3 sample; value decreases with depth. Uranium-238 was detected in 1 sample >BV in fill material but not at deeper sample intervals at that location.					One detect of gross gamma was noted in the 1 sample screened; however, gamma spectroscopy analysis of fixed-laboratory samples that were taken at the same location did not detect anything.					Extent is not defined for TAL metals below the 1 sample collected from the 19- to 20-ft depth; for SVOCs below the 1 sample collected from the 9- to 10-ft depth; for VOCs below the 1 sample collected from the 14- to 15-ft depth; for isotopic plutonium, isotopic uranium, strontium-90, and tritium from below the 20-ft depth.								
52-003(b), industrial wasteline	—	0	—	—	—	—	0	—	—	—	—	0	—	—	—	—	0	—	—	—	—	0	0	—	—	—	—	0	0	—	—	—	✓	✓	—	✓	✓	✓	✓
	No samples have been collected from this SWMU.					No samples have been collected from this SWMU.					No samples have been collected from this SWMU.					No samples have been collected from this SWMU.					No samples have been collected from this SWMU.					No samples have been collected from this SWMU.					Verification sampling for TAL metals, VOCs, isotopic plutonium and uranium, gamma spectroscopy, strontium-90, and tritium analysis is required to complete the data set for assessment.								

Table 2.4-2 (continued)

Consolidated Unit Number, Individual SWMU Number, and Description	Inorganics					Organics										Radionuclides						Data Needs Conclusion																	
	Metals					SVOCs					VOCs					HE					Alpha/Beta			Gamma			Checked categories have detected constituents whose extent has not been defined												
	COPCs expected at SWMU?	Number of fixed-laboratory samples	> BV or detected?	Vertical extent defined?	Lateral extent defined?	COPCs expected at SWMU?	Number of fixed-laboratory samples	> BV or detected?	Vertical extent defined?	Lateral extent defined?	COPCs expected at SWMU?	Number of fixed-laboratory samples	> BV or detected?	Vertical extent defined?	Lateral extent defined?	COPCs expected at SWMU?	Number of fixed-laboratory samples	> BV or detected?	Vertical extent defined?	Lateral extent defined?	COPCs expected at SWMU?	Number of screening <sup>a</sup> samples	Number of fixed-laboratory samples	> BV <sup>b</sup> or detected?	Vertical extent defined?	Lateral extent defined?	COPCs expected at SWMU?	Number of screening samples	Number of fixed-laboratory samples	> BV or detected?	Vertical extent defined?	Lateral extent defined?	Metals	SVOCs and/or VOCs	HE	Isotopic Plutonium and/or Uranium	Gamma Spectroscopy	Strontium 90	Tritium
63-001(a), septic tank	Y	3	3	Y	Y	U	3	2	Y	Y	U	3	1	Y	Y	N	0	—	—	—	Y	3	32	8	Y	Y	Y	1	2	1	Y	Y	—	—	—	—	—	—	—
	Boron, lithium, silver and strontium metals were detected in up to 3 samples; the highest value was 9 ppm for strontium. BVs for these metals are not available except for silver at 1 ppm, the detected value is 1.2 ppm.					Di-n-butylphthalate was detected in 2 samples: 1 at 30 ft and 1 at 60 ft. Value decreases with depth from 0.17 mg/kg (J-flagged) to 0.096 mg/kg (J-flagged).					Xylene was detected in 1 sample (at 0.001 mg/kg and J-flagged) at 60 ft depth (deepest sample).					No analysis was conducted for HE, based on process knowledge.					Three detects of gross alpha/beta were noted in the 3 samples screened, 1 of the samples is associated with detected plutonium-238, -239. Plutonium-238 was detected in 5 Qbt 3 samples, plutonium-239 was detected in 6 Qbt 3 samples. There is no BV for Qbt 3; all values decrease with depth. Only 1 uranium-235 detected value decreases with depth.						One detect of gross gamma was noted in the 1 sample screened; there is no fixed-laboratory data for gamma spec. analysis at the same location. Cesium-134 was detected in 1 of the 2 samples (collected at 44-ft depths) at 0.21 pCi/g; there is no BV for cesium-134.						There are no data needs for SWMU 63-001(a).						
63-001(b), septic tank	Y	3	3	Y	Y	U	3	3	Y	Y	U	3	N	Y	Y	N	0	—	—	—	Y	3	32	7	Y	Y	Y	1	3	N	Y	Y	—	—	—	—	—	—	—
	Arsenic, lithium, molybdenum, and strontium metals were detected in up to 3 samples; the highest value was 4.9 ppm for strontium. BVs for these metals are not available except for arsenic at 2.79; the detected value is 3 ppm.					Benzo(a)anthracene was detected in only 1 shallow sample (4-5 ft) and di-n-butylphthalate was detected in 2 samples (both J-flagged, both less than 0.06 mg/kg).					No VOCs were detected.					No analysis was conducted for HE, based on process knowledge.					Three detects of gross alpha/beta were noted in the 3 samples screened. One of the samples is associated with detected plutonium-238. Plutonium-238 was detected in 3 Qbt 3 samples; there is no BV for Qbt 3. Plutonium-239 was not detected. Uranium-235 was detected in 4 Qbt 3 samples at values just above BV. All values decrease with depth.						No gamma-emitting radionuclides were detected.						There are no data needs for SWMU 63-001(b).						

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**SWMU 05-001(a)-99** consists of SWMUs 05-001(a and b), former firing sites; SWMU 05-002, a former canyon-side disposal site; and SWMU 05-006(h), soil contamination (see Appendix A for a detailed description of the SWMUs). ER Project RFI activities occurred at these SWMUs during 1994 and 1995. Approximately 47 samples were collected and submitted for various analyses such as TAL metals, HE, isotopic uranium, isotopic plutonium, and gamma-emitting radionuclides.

At least 1 metal was detected at levels greater than its BV in every one of the 29 samples (collected from 13 locations). Extent is not defined for TAL metals in alluvial deposits, or for the locations with detected metals at depth.

Based on process knowledge of the firing site, SVOCs and VOCs were not anticipated at this site. Except for adding HE analysis to every sample location (HE analyses were primarily performed in a field laboratory), EPA requested no modification to organics analysis per their review of the OU 1129 work plan. Based on results of field analysis, three samples were submitted for offsite analysis of HE; no chemicals were detected. Although SVOCs and VOCs were not anticipated at the site, and HE was not detected, extent is not defined for SVOCs or HE at SWMUs 05-001(a) and 05-001(b), on the bench, or for the alluvial deposits at the base of the drainage channel leading from these SWMUs.

Plutonium-238, -239 was detected in 3 out of 47 samples with only 1 detected concentration greater than BV. Uranium-234, -235, -238 was detected in 29 out of 47 samples, with decreasing trend at locations with more than one sample depth. However, the detected concentrations did not decrease below BVs. Extent is not defined for the bench, alluvial deposits, or other locations where the detected samples are greater than BVs at depth. Gamma-emitting radionuclides were not detected in the 3 samples analyzed; however, extent is not defined for the bench or the alluvial deposits.

To complete the data set for assessment, as shown in Table 2.4-2, SWMU 05-001(a)-99 requires additional data for TAL metals, HE, isotopic plutonium, isotopic uranium, and gamma-emitting radionuclides.

**AOC 05-001(c)** is an inactive firing site (see Appendix A for a detailed description of the AOC). ER Project activities occurred at this AOC during 1994 and 1995. For laboratory analyses of isotopic plutonium and uranium and TAL metals, approximately 31 samples were collected from 20 locations. Two samples were analyzed for gamma-emitting radionuclides and HE. The AOC boundary/affected area does not extend downslope at this site.

At least 1 metal was detected at a level greater than its BV in 13 out of 31 samples. Extent is not defined for TAL metals at depth. Based on the process knowledge of the firing site, SVOCs and VOCs were not anticipated at this site. Except for adding HE analysis to every sample location (HE analyses were primarily performed in a field laboratory), EPA required no modification to organics analysis per their review of the OU 1129 work plan. Based on results of field analysis, two samples were submitted for offsite analysis of HE; no chemicals were detected. Although SVOCs and VOCs are not anticipated at the site, and HE was not detected, extent is not defined for SVOCs and HE within the drainage of this SWMU. Additional HE data will also be collected from additional surface samples at this site.

Plutonium-238, -239 was detected in a total of 10 out of 31 samples, with only 2 detected concentrations greater than BVs in surface samples. Extent is not defined at depth for Location IDs 05-02021 and 05-02022. Uranium-234, -235, -238 was detected in 6 samples, with decreasing trend noted at locations with more than one sample depth. However, extent is not defined at depth for Location ID 05-02024. Gamma-emitting radionuclides were not detected in the 2 samples collected; no additional samples are required.

To complete the data set for assessment, as shown in Table 2.4-2, AOC 05-001(c) needs additional data for TAL metals, HE, isotopic plutonium, and isotopic uranium.

**SWMU 05-005(a)-00** consists of SWMU 05-005(a), a former French drain from the former control building TA-05-04; and SWMUs 05-006(b) and 05-006(e), both areas of soil contamination (see Appendix A for a detailed description of the SWMUs). In 1995, approximately 29 samples were collected from 14 locations. Samples underwent various analyses, including TAL metals, SVOCs, VOCs, HE, isotopic plutonium, isotopic uranium, and gamma-emitting radionuclides.

At least 1 metal was detected at a level greater than BV in 6 of the 10 samples collected from 3 locations. Extent is not defined for TAL metals in alluvial deposits or near Location 05-02010 at depth.

Fluoranthene and pyrene were detected in 1 sample in fill material within the footprint of former French drain SWMU 05-005(a). Nothing was detected in 2 other samples from deeper intervals at this SWMU; no additional sampling will be conducted for SVOCs in the SWMU footprint. However, to determine if SVOCs migrated downslope, SVOC data are required for the alluvial deposits at the base of the drainage channel leading from this SWMU. Toluene was detected in 3 samples, 2 of the 3 samples are at depth (5-6 ft), VOC data is required at an additional depth below the detected chemical and from the alluvial deposits at the base of the drainage channel leading from this SWMU. SVOCs and VOCs were not anticipated at firing site debris SWMUs 05-006(b and e), based on process knowledge, so no samples were collected and no additional data are required. HE was not detected in the one sample analyzed; however, lateral extent is not defined in surface soil, and lateral and vertical extent is not defined for the bench or in the alluvial deposits of the drainage channels below the SWMU.

Plutonium-238, -239 was detected in a total of 3 out of 29 samples, with only 2 detected concentrations greater than BV. Uranium-234, -238 were detected in a total of 5 out of 29 samples, with decreasing trend at 2 locations where more than one sample depth exists. However, extent is not defined for the bench, the alluvial deposits, or the other locations where plutonium and uranium isotopes are greater than BVs at depth. Gamma-emitting radionuclides were not detected in the 3 samples collected; however, extent is not defined for the bench or the alluvial deposits.

To complete the data set for assessment, as shown in Table 2.4-2, SWMU 05-005(a)-00 needs additional data for TAL metals, SVOCs, VOCs, HE, isotopic plutonium, isotopic uranium, and gamma spectroscopy analysis.

**SWMU 52-002(a)** is a former septic system for the UHTREX (see Appendix A for a detailed description of the SWMU). In 1995, the ER Project collected 26 samples from 6 locations (5 in the drainfield and 1 between the distribution box and septic tank) down to a depth of 20 ft bgs. The tank bottom was approximately 8–10 ft bgs. Based on process knowledge of the UHTREX, the radionuclides expected at the site (if contamination existed) were plutonium-238, -239; uranium-234, -235, -238; strontium-90; cobalt-60; and cesium-137. Every sample was analyzed for isotopic plutonium and uranium, with a small subset (3) analyzed at an offsite laboratory (as explained in first paragraph of this section) for TAL metals, SVOCs, VOCs, and gamma-emitting radionuclides.

Lithium, molybdenum, or strontium metals were detected in three analyses; BVs for these metals are not available. Extent is not defined for TAL metals at depths below the tank bottom, as no samples for metals were collected at that location.

Butylbenzylphthalate and di-n-butylphthalate were detected (from the 9- to 10-ft depth) in 1 of 3 analyses; however, no data exist from a deeper interval at this location. To define extent, additional data are required from a deeper depth near this location. No VOCs were detected in the 3 samples collected; however, the samples were only collected from below the distribution box and leach field, not in the sample nearest the tank bottom. Therefore, a VOC sample needs to be collected from 2 depths below the depth of the tank bottom. HE was not anticipated at the site, based on process knowledge, so no samples were collected and no additional sampling is required.

**Table 2.4-3  
Data Requirements for Sigma Mesa Subarea**

Individual SWMU Number, and Description	Inorganics												Organics						Radionuclides									Data Requirements Conclusions (Checked categories have detected constituents whose extent has not been defined)																						
	Cyanide				Metals				SVOCs				VOCs		PCBs		Alpha/Beta			Gamma			Tritium			Metals	SVOCs and /or VOCs	PCBs	Isotopic Plutonium	Isotopic Uranium	Gamma spectroscopy	Tritium																		
	COPCs expected at SWMU?	Number of fixed-laboratory samples > BV or detected?	Vertical extent defined?	Lateral extent defined?	COPCs expected at SWMU?	Number of fixed-laboratory samples > BV or detected?	Vertical extent defined?	Lateral extent defined?	COPCs expected at SWMU?	Number of fixed-laboratory samples > BV or detected?	Vertical extent defined?	Lateral extent defined?	COPCs expected at SWMU?	Number of fixed-laboratory samples > BV or detected?	Vertical extent defined?	Lateral extent defined?	COPCs expected at SWMU?	Number of screening samples	Number of fixed-laboratory samples > BV or detected?	Vertical extent defined?	Lateral extent defined?	COPCs expected at SWMU?	Number of screening samples	Number of fixed-laboratory samples > BV or detected?	Vertical extent defined?								Lateral extent defined?	COPCs expected at SWMU?	Number of fixed-laboratory samples > Detected?	Vertical extent defined?	Lateral extent defined?													
<b>60-004(c),</b> outdoor drum storage area	N	0	-	-	-	N	0	-	N	N	Y	5	0	Y	Y	U	5	0	Y	Y	U	5	0	Y	Y	U	10	4	0	Y	Y	U	0	10	1	Y	Y	N	0	-	-	-	-	-	-	-	-	-	There are no data requirements for AOC 60-004(c)	
<b>60-004(e),</b> outdoor storage area	N	0	-	-	-	Y	3	2	N	N	Y	3	0	N	N	U	4	2	N	N	U	2	0	Y	N	N	0	0	-	-	-	N	0	0	-	-	-	N	0	-	-	-	✓	✓	✓	-	-	-	-	Extent is not defined for TAL metals, SVOCs, VOCs, and PCBs in alluvial deposits or locations where the detected chemical was at depth.
<b>60-005(a),</b> solar pond	U	8	N	Y	Y	Y	16	4	N	N	U	14	1	N	N	U	5	0	Y	Y	N	0	-	-	-	Y	16	1	16	N	N	Y	0	16	6	N	N	U	9	2	N	N	✓	✓	-	✓	✓	✓	✓	Extent is not defined for TAL metals, SVOCs, VOCs, isotopic plutonium, isotopic uranium, gamma-emitting radionuclides, or tritium in alluvial deposits or the locations where the detected chemicals/radionuclides are at depth.

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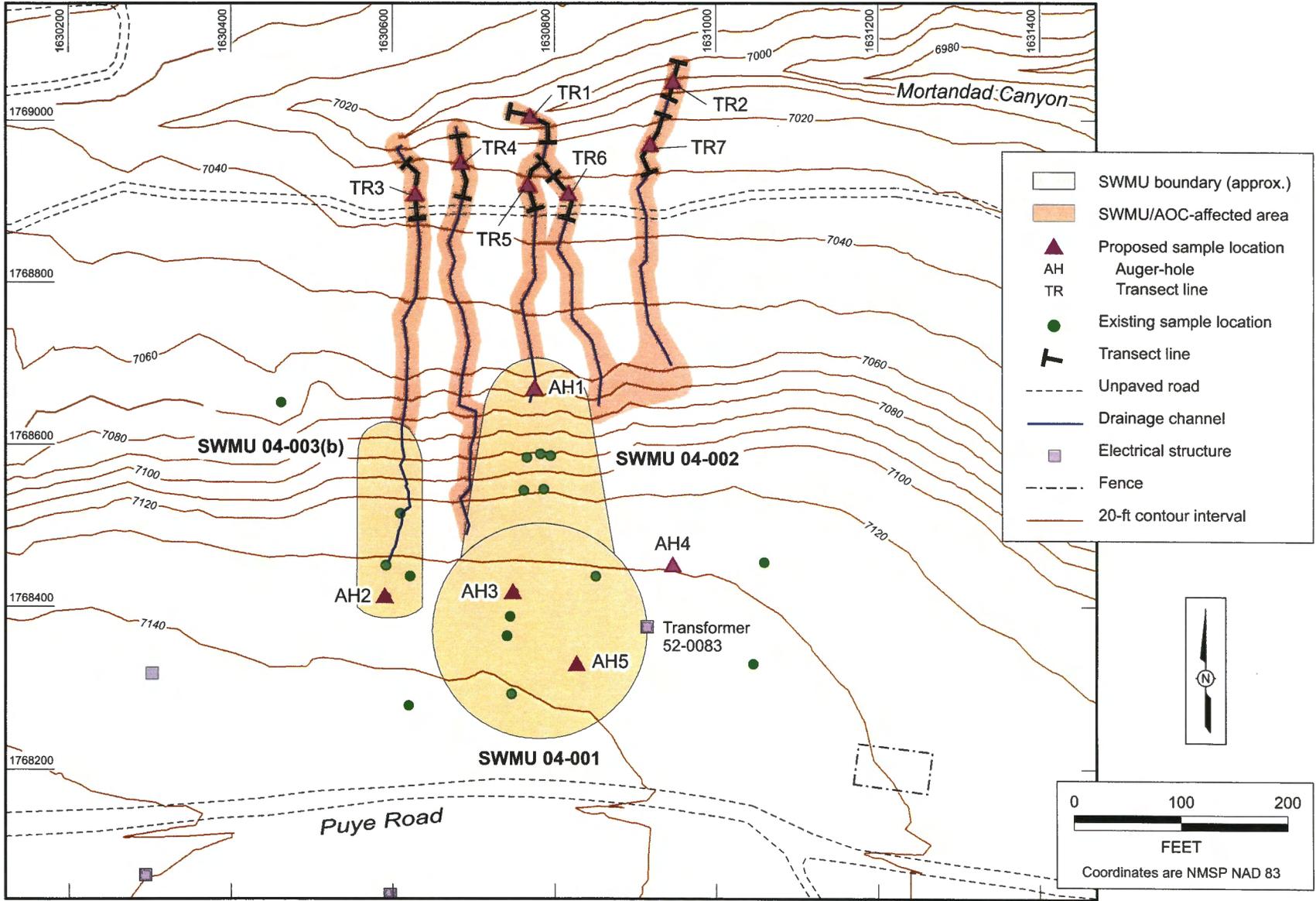
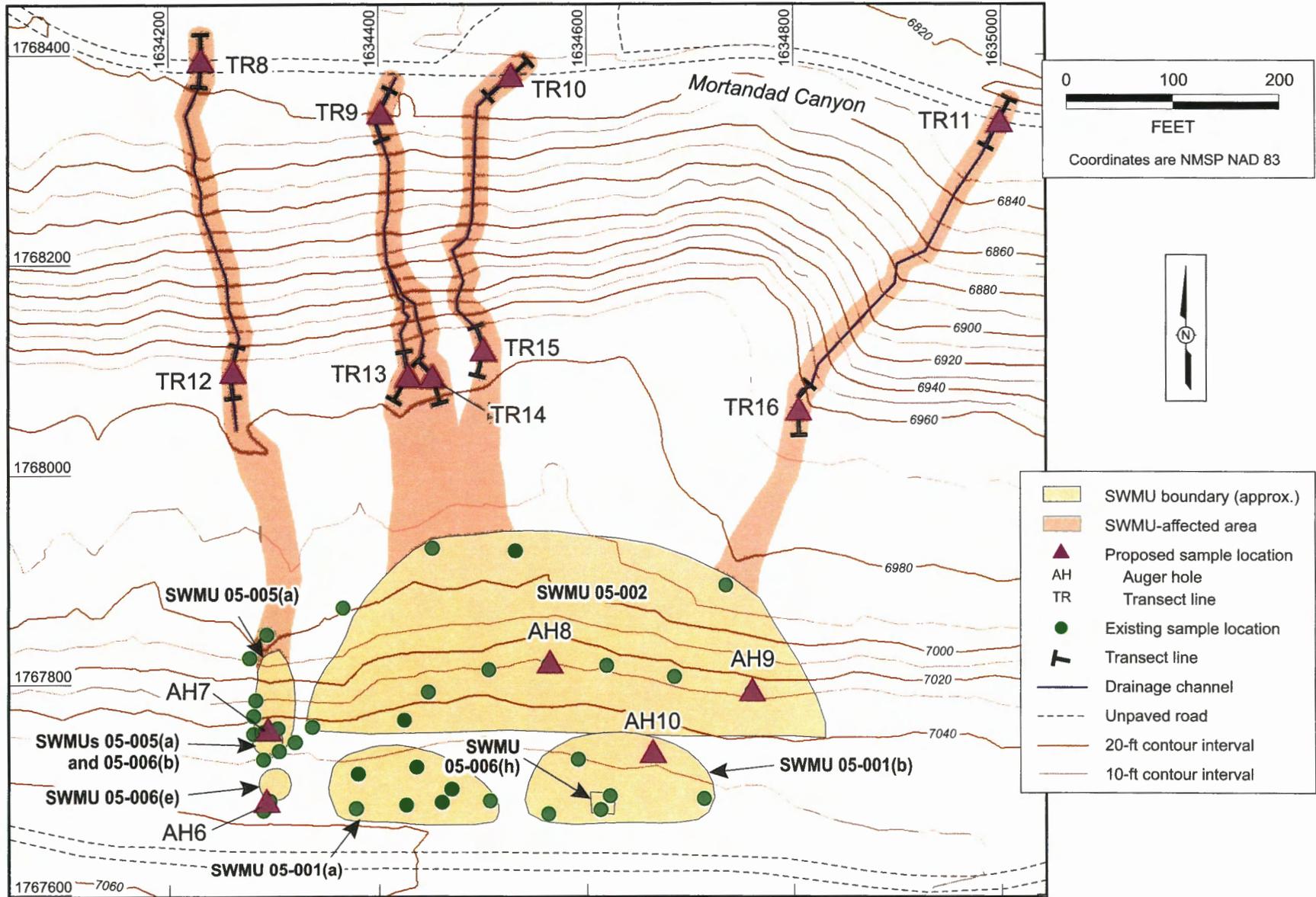


Figure 3.2-1. Proposed sampling locations at TA-04 in the East Ten Site Slope Subarea



Source: R.L. Budd (RRES db), Map #05, 102703  
Rev. for F3.2-2, NOD for TA-35 ISAP Addendum, 051304, Ibl

Figure 3.2-2. Proposed sampling locations at TA-05 (west) in the East Ten Site Slope Subarea

The channels terminate in alluvial deposits before merging with the stream channel in the canyon bottom. The alluvial deposits and sediment packages in the channels will be characterized by geomorphic surveys described above and by chemical analyses of sediment samples collected from potentially contaminated geomorphic units. Additional samples may be collected if several geomorphic units are identified within the sample area. The SWMUs and AOCs identified in Tables 3.2-1 and 3.2-2 and summarized below are listed in numeric order and presented in corresponding Figures 3.2.1–3.2.4.

**SWMU 04-001-99** consists of SWMUs 04-001, 04-002 and 04-003(b) (see Appendix A for SWMU descriptions). The assessment of data requirements confirms that SWMU 04-001-99 needs data for TAL metals, SVOCs, VOCs, HE, isotopic plutonium, isotopic uranium, and gamma spectroscopy analyses to complete the data set for assessment.

To define vertical and lateral extent, seven transects are proposed: five on the bench and two in the alluvial deposits at the slope base. Samples will be collected from two depths determined by the geomorphologist. Geomorphic mapping and subsequent sample collection shall be carried out as described in section 4.0, "Data Collection and Sampling Procedures," of the SAP for Middle Mortandad/Ten Site Aggregate (LANL 2002, 73092). Five auger holes are proposed at previous sample locations 04-02011, 04-02016, 04-02019, 04-02021 and 04-02025 to be dug to various depths (1 to 9 ft) to determine vertical extent of contamination. Sampling procedures and SOPs for the shallow auger holes shall be implemented as stated in section 4.3, "Sample Collection," of the SAP for Middle Mortandad/Ten Site Aggregate (LANL 2002, 73092). The list of sample analyses proposed for all sample locations is presented in Table 3.2-1.

**SWMU 05-001(a)-99** consists of SWMUs 05-001(a and b), SWMU 05-002, and SWMU 05-006(h) (see Appendix A for SWMU descriptions). The assessment of data requirements confirms SWMU 05-001(a)-99 needs additional data for TAL metals, HE, isotopic plutonium, isotopic uranium, and gamma spectroscopy analyses to complete the data set for assessment.

To define vertical and lateral extent, seven transects are proposed: four on the bench and three in the alluvial deposits at the slope base. Samples will be collected from two depths as determined by the geomorphologist. Geomorphic mapping and subsequent sample collection shall be carried out as described in section 4.0, "Data Collection and Sampling Procedures," of the SAP for Middle Mortandad/Ten Site Aggregate (LANL 2002, 73092).

Three auger holes are proposed, one each at locations 05-02051, 05-02059, and 05-02060, to be augered to 6-ft depths to determine vertical extent of contamination. Sampling procedures and standard operating procedures (SOPs) for the shallow auger holes shall be implemented as stated in section 4.3, "Sample Collection," of the SAP for Middle Mortandad/Ten Site Aggregate (LANL 2002, 73092). Sampling procedures and SOPs for the shallow auger holes shall be implemented as stated in that same section. The list of sample analyses proposed for all locations is presented in Table 3.2-1.

**SWMU 05-005(a)-00** consists of SWMU 05-005(a), 05-006(b), and 05-006(e) (see Appendix A for SWMU descriptions). The assessment of data requirements confirms that SWMU 05-005(a)-00 needs data for TAL metals, VOCs, SVOCs, HE, isotopic plutonium, isotopic uranium, and gamma spectroscopy analyses to complete the data set for assessment.

To define vertical and lateral extent, two transects are proposed: one on the bench and one in the alluvial deposits at the slope base. Samples will be collected from two depths as determined by the geomorphologist. Geomorphic mapping and subsequent sample collection shall be carried out as described in section 4.0, "Data Collection and Sampling Procedures," of the SAP for Middle Mortandad/Ten Site Aggregate (LANL 2002, 73092). Two auger holes are proposed, one at location 05-

02012 and one between locations 05-02068 and 05-02069, to be augered to 6-ft depths to determine vertical extent of contamination. Sampling procedures and SOPs for the shallow auger holes shall be implemented as stated in section 4.3, "Sample Collection," of the SAP for Middle Mortandad/Ten Site Aggregate (LANL 2002, 73092). Sampling procedures and SOPs for the shallow auger holes shall be implemented as stated in that same section. The list of sample analyses proposed for all locations is presented in Table 3.2-1.

**AOC 05-001(c)** is a former firing site (see Appendix A for AOC description). Based on the assessment of data, additional data requirements for AOC 05-001(c) are TAL metals, HE, isotopic plutonium, and isotopic uranium analyses to complete the data set.

Four auger holes are proposed, one each at locations 05-02021, 05-02022, and 05-02024, and one between locations 05-02025 and 05-02026, to be augered to a depth of 6 ft to determine vertical extent of contamination. Sampling procedures and SOPs for the shallow auger holes shall be implemented as stated in section 4.3, "Sample Collection," of the SAP for Middle Mortandad/Ten Site Aggregate (LANL 2002, 73092). The sample analyses proposed for all locations is presented in Table 3.2-1.

**Table 3.2-1  
Proposed Samples for East Ten Site Slope Subarea (TA-04 and TA-05)**

SWMU or AOC Number and Description	Description of Sample Locations (see Figures 3.2-1 through 3.2-3 for maps)	Sample Number	Metals	HE	SVOCs	VOCs	Isotopic Plutonium	Isotopic Uranium	Gamma Spectroscopy	
04-001-99	04-001, former firing site	TR1	2	2	2	N/A	2	2	2	
		TR2	2	2	2	N/A	2	2	2	
		TR3	2	2	2	2	2	2	2	
		TR4	2	2	2	N/A	2	2	2	
		TR5	2	2	2	N/A	2	2	2	
		TR6	2	2	2	N/A	2	2	2	
		TR7	2	2	2	N/A	2	2	2	
	04-002, former surface disposal area	Dig seven transects <sup>a</sup> or auger holes (TR1–TR7) for geomorphic characterization: TR1–TR5 on a bench and TR6–TR7 in alluvial deposits at base of slope; collect samples from two depths as determined by geomorphologist.								
	04-003(b), former outfall	Hand auger at Location IDs 04-02025 (AH1 at 3-ft and 6-ft depths), 04-02011 (AH2 at 6-ft and 9-ft depths), 04-02016 (AH3 at 3-ft and 6-ft depths), 04-02019 (AH4 at 0- to 0.5-ft, 3-ft, and 6-ft depths), and 04-02021 (AH5 at 3-ft and 6-ft depths)	AH1	2	2	N/A <sup>b</sup>	N/A	N/A	2	N/A
			AH2	2	2	2	2	2	2	2
			AH3	2	2	2	N/A	N/A	2	N/A
AH4			2	2	N/A	N/A	2	2	N/A	
AH5			2	2	2	N/A	N/A	2	2	
<b>Subtotal of Samples</b>			<b>24</b>	<b>24</b>	<b>20</b>	<b>4</b>	<b>18</b>	<b>24</b>	<b>18</b>	

Table 3.2-1 (continued)

SWMU or AOC Number and Description		Description of Sample Locations (see Figures 3.2-1 through 3.2-3 for maps)	Sample Number	Metals	HE	SVOCs	VOCs	Isotopic Plutonium	Isotopic Uranium	Gamma Spectroscopy
05-001(a)-99	05-006(h), soil contamination	Dig seven transects <sup>a</sup> or auger holes (TR9–TR11 and TR13–TR16) for geomorphic characterization: TR9–TR11 in alluvial deposits at base of slope, and TR13–TR16 on the bench; collect samples from two depths as determined by geomorphologist.	TR9	2	2	2	N/A	2	2	2
			TR10	2	2	2	N/A	2	2	2
			TR11	2	2	2	N/A	2	2	2
			TR13	2	2	2	N/A	2	2	2
			TR14	2	2	2	N/A	2	2	2
			TR15	2	2	2	N/A	2	2	2
	05-001(a) and 05-001(b), former firing sites(s)	Hand auger at Location IDs 05-02059 (AH8 at 3-ft and 6-ft depths), 05-02060 (AH9 at 3-ft and 6-ft depths), and 05-02051 (AH10 at 3-ft and 6-ft depths)	TR16	2	2	2	N/A	2	2	2
			AH8	2	2	2	N/A	N/A	2	N/A
			AH9	2	2	2	N/A	2	2	N/A
			AH10	2	2	2	N/A	N/A	2	N/A
05-002 canyon-side disposal area										
<b>Subtotal of Samples</b>				<b>20</b>	<b>20</b>	<b>20</b>	<b>0</b>	<b>16</b>	<b>20</b>	<b>14</b>
05-005(a)-00	05-005(a), former French drain	Dig two transects or auger holes (TR8 and TR12) for geomorphic characterization: TR8 in alluvial deposits at base of slope and TR12 on the bench; collect samples from two depths as determined by geomorphologist.	TR8	2	2	2	2	2	2	2
			TR12	2	2	2	2	2	2	2
			AH6	2	2	2	2	2	2	N/A
			AH7	2	2	2	2	2	N/A	N/A
	05-006(b) 05-006(e), soil contamination	Hand auger between Location IDs 05-02068/-02069 (AH6 at 3-ft and 6-ft depths) and Location ID 05-02012 (AH7 at 3-ft and 6-ft depths)								
<b>Subtotal of Samples</b>				<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>6</b>	<b>4</b>
05-001(c), former firing site	Hand auger at or between Location IDs 05-02024 (AH11 at 3-ft and 6-ft depths), 05-02025/-02026 (AH12 at 3-ft and 6-ft depths), 05-02021 (AH13 at 3-ft and 6-ft depths), and 05-02022 (AH14 at 3-ft and 6-ft depths)	AH11	2	2	2	N/A	2	2	N/A	
		AH12	2	N/A	2	N/A	2	2	N/A	
		AH13	2	2	2	N/A	2	2	N/A	
		AH14	N/A	2	2	N/A	2	N/A	N/A	
<b>Subtotal of Samples</b>				<b>6</b>	<b>6</b>	<b>8</b>	<b>0</b>	<b>8</b>	<b>6</b>	<b>0</b>
<b>Total Minimum Number of Samples</b>				<b>54</b>	<b>50</b>	<b>56</b>	<b>12</b>	<b>50</b>	<b>56</b>	<b>36</b>

<sup>a</sup> Transect depth varies to include all post-Laboratory sediments/soils; does not extend into tuff but can go as deep as the soil/tuff interface.

<sup>b</sup> N/A = not applicable.

**SWMU 52-002(a)** is a former septic system (see Appendix A for SWMU descriptions). The assessment of data requirements confirms that SWMU 52-002(a) needs data for TAL metals, SVOCs, VOCs, isotopic plutonium, isotopic uranium, strontium-90, and tritium analyses to complete the data set for assessment.

Four transects are proposed to define vertical and lateral extent in the alluvial deposits at the slope base. Samples will be collected from two depths as determined by the geomorphologist. Geomorphic mapping and subsequent sample collection shall be carried out as described in section 4.0, "Data Collection and Sampling Procedures," of the SAP for Middle Mortandad/Ten Site Aggregate (LANL 2002, 73092). Four boreholes (BH1–BH4) will be drilled at Location IDs 52-02002 (BH1), 52-02006 (BH2), 52-02003 (BH3), and 52-02008 (BH4) to depths of 30 ft to obtain extent of contamination information from below sample depths previously collected. The boreholes will be installed using a decontaminated continuous 5-ft core barrel. The SOPs for decontaminating sampling and drilling equipment and for collecting soil and/or rock samples with a split-barrel core are listed in section 4.3, "Sample Collection," of the SAP for Middle Mortandad/Ten Site Aggregate (LANL 2002, 73092). The list of sample analyses proposed for all locations is presented in Table 3.2-2.

**AOC 52-003(a)** is a former neutralization and waste pumping facility associated with the former UHTREX facility (see Appendix A for AOC descriptions). The assessment of data requirements confirms that AOC 52-003(a) needs data for TAL metals, SVOCs, VOCs, isotopic plutonium, isotopic uranium, gamma spectroscopy, strontium-90, and tritium analyses to complete the data set for assessment.

One borehole (BH5) will be drilled at former Location ID 52-02010 to a depth of 35 ft to obtain extent of contamination information from below sample depths previously collected. Because the samples will be collected only from the 25-ft, 30-ft, and 35-ft depths of the borehole, it is not necessary to save any core from borehole spoils above the 25-ft sample interval, as previous data exist to the depth of 20 ft. The borehole will be installed using a decontaminated continuous 5-ft core barrel. The SOPs for decontaminating sampling and drilling equipment and for collecting soil and/or rock samples with a split-barrel core are listed in section 4.3, "Sample Collection," of the SAP for Middle Mortandad/Ten Site Aggregate (LANL 2002, 73092). The list of sample analyses proposed for this AOC is presented in Table 3.2-2.

**AOC 52-003(b)** is a former industrial wasteline associated with the former UHTREX facility (see Appendix A for AOC descriptions). The assessment of data requirements confirms that AOC 52-003(b) needs data for TAL metals, VOCs, isotopic plutonium, isotopic uranium, gamma spectroscopy, strontium-90, and tritium analyses to complete the data set for assessment.

**Table 3.2-2  
Proposed Samples for East Ten Site Slope Subarea (TA-52 and TA-63)**

SWMU or AOC Number and Description	Description of Sample Locations (see Figure 3.2-4 for map)	Sample Number	Metals	SVOCs	VOCs	Isotopic Plutonium	Isotopic Uranium	Gamma Spectroscopy	Strontium-90	Tritium
52-002(a), former UHTREX septic system	Dig four transects <sup>a</sup> or auger holes (TR17–TR20) for geomorphic characterization of alluvial deposits at base of slope; collect samples from two depths as determined by geomorphologist.	TR17	N/A <sup>b</sup>	N/A	N/A	2	2	2	2	2
		TR18	2	2	N/A	2	2	2	2	2
		TR19	N/A	N/A	N/A	2	2	2	2	2
		TR20	2	2	N/A	2	2	2	2	2
	Drill four boreholes (BH1–BH4) to 30-ft depths at Location IDs 52-02002 (BH1), 52-02006 (BH2), 52-02003 (BH3), and 52-02008 (BH4). Collect samples from 4 depths: 10 ft, 15 ft, 25 ft, and 30 ft.	BH1	N/A	4	N/A	4	N/A	N/A	4	4
		BH2	4	4	N/A	4	N/A	N/A	4	4
		BH3	N/A	4	N/A	4	N/A	N/A	4	4
		BH4	4	4	4	4	N/A	4	4	4
<b>Subtotal of Samples</b>			<b>12</b>	<b>20</b>	<b>4</b>	<b>24</b>	<b>8</b>	<b>12</b>	<b>24</b>	<b>24</b>
52-003(a), former neutralization and waste pumping facility	Drill Borehole (BH5) at Location ID 52-02010; collect samples from three depths: 25 ft, 30 ft, and 35 ft.	BH5	3	3	3	3	N/A	N/A	3	3
		<b>Subtotal of Samples</b>			<b>3</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
52-003(b), former industrial wasteline	Dig fifteen transects <sup>a</sup> or auger holes (TR21–TR35 [75-ft intervals]) to intersect area where industrial wasteline was previously located. Collect samples from two depths: one directly below pipe (fill) and one at the 18- to 24-in. interval.	TR21	2	N/A	2	2	2	2	2	2
		TR22	2	N/A	2	2	N/A	N/A	N/A	N/A
		TR23	2	N/A	2	2	2	2	2	2
		TR24	2	N/A	2	2	N/A	N/A	N/A	N/A
		TR25	2	N/A	2	2	2	2	2	2
		TR26	2	N/A	2	2	N/A	N/A	N/A	N/A
		TR27	2	N/A	2	2	2	2	2	2
		TR28	2	N/A	2	2	N/A	N/A	N/A	N/A
		TR29	2	N/A	2	2	2	2	2	2
		TR30	2	N/A	2	2	2	2	2	2
		TR31	2	N/A	2	2	2	2	2	2
		TR32	2	N/A	2	2	2	2	2	2
		TR33	2	N/A	2	2	2	2	2	2
		TR34	2	N/A	2	2	2	2	2	2
		TR35	2	N/A	2	2	2	2	2	2
<b>Subtotal of Samples</b>			<b>30</b>	<b>0</b>	<b>30</b>	<b>30</b>	<b>22</b>	<b>22</b>	<b>22</b>	<b>22</b>
63-001(a), septic tank	No data requirements identified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
63-001(b), septic tank	No data requirements identified	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Total Minimum Number of Samples</b>			<b>45</b>	<b>23</b>	<b>37</b>	<b>57</b>	<b>30</b>	<b>34</b>	<b>49</b>	<b>49</b>

<sup>a</sup> Transect depth varies to include all post-Laboratory sediments/soils; it does not extend into tuff but can go as deep as the soil/tuff interface.

<sup>b</sup> N/A = not applicable.

Fifteen transects are proposed to define vertical and lateral extent below and around the former wasteline using a backhoe to intercept the former wasteline. The D&D report stated that the pipe was approximately 5–6.5 ft bgs and material was removed to depths of approximately 6.5 ft. Samples will be collected at 75-ft intervals along the former 500-ft pipeline length from two depths. The first interval will be directly below the former pipeline excavation (6.5 ft bgs) and the second interval will be 18 in. below the first. Collection of grab samples shall be carried out as described in section 4.3, “Sampling Collection,” of the SAP for Middle Mortandad/Ten Site Aggregate (LANL 2002, 73092). The list of sample analyses proposed for this AOC is presented in Table 3.2-2.

**PRS 63-001(a) and PRS 63-001(b)** former sanitary septic systems do not require additional sampling.

### **3.2.2 Sigma Mesa Subarea**

#### **3.2.2.1 Specific Sampling Approach Assumptions**

The data requirements uncovered during the data assessment phase determined that additional sampling is required primarily to determine the extent of contamination. The sampling approach for Sigma Mesa SWMUs and AOCs is similar to those of the Mesa Top Subarea (see section 3.2.1 of the original SAP) and the East Ten Site Slope Subarea (see above). The following assumptions are built into the sampling design:

- The Sigma Mesa Subarea land-use scenario and future use are expected to be both industrial (on the flat mesa top) and recreational (on slopes) (i.e., the end state [ultimate fate of area] of TA-60 will be industrial and future environmental stewardship will belong to the facility owner/manager/developer).
- The subarea will be evaluated as an aggregate.
- Previous user group cleanups have removed most AOC-related PAH COPC sources in the subarea.
- The subarea sample design identified both previous sampling locations where extent of contamination was not determined and individual outfall channels where sampling was not performed previously.
- Each outfall channel's alluvial deposits will be the emphasis of the investigation and the focus will be on determining the nature and extent of potentially contaminated sediment deposits (post-1944) but will also include supplemental characterization of pre-1943 deposits.
- The following criteria are used to select transect locations:
  - ◆ Choose areas where COPC concentrations are expected to be highest as judged from previous sampling and analysis activities.
  - ◆ Choose areas with a variety of geomorphologic characteristics to allow better estimates of the total COPC inventory and of variation in COPC distribution.
- Topographic boundaries are recognized for lateral extent of contamination.

- Any subdivisions of geomorphic units within alluvial deposits that are identified by the geomorphologist may require (rapid) phased sampling.
- Contaminant suites are determined by knowledge of process and existing data.
- The sampling design for the slopes supports the Canyons Focus Area investigations and is derived from the “Core Document for Canyons Investigations” (LANL 1997, 62316).

### 3.2.2.2 Field Surveys and Mapping

The investigation will consist of three tasks: an engineering survey to locate approximate former sample locations at AOC 60-004(e), geomorphic mapping, and subsurface sample collection. The geomorphic mapping will be the most complex of the three tasks.

Hillslope operational discharges or releases may lead to migration of COPCs down the steep slope to the canyon bottom, with packages of sediment moving with each storm event or operational discharge or spill. A geomorphic understanding of the depositional area, typically the “alluvial fan” at the toe of the slope where soil/sediments tend to migrate and diffuse, is necessary for this investigation to help identify areas of historic sediment accumulation. The geomorphic mapping of the channels and alluvial deposits will be used to identify different ages of sediment packages, young (post-1944) or old (pre-1943), and to identify the depositional settings which may contain different concentrations of COPCs. The geomorphic mapping data will also indicate subdivisions within any geomorphic unit (definable areas with potential variations in thickness, history, and/or contaminants) and sample collection will commence accordingly. If units have significant vertical variation in COPC concentrations, the units may be subdivided into two or more distinct stratigraphic layers. Radiation screening results and laboratory analyses will be examined to determine if the geomorphic units are appropriate for defining contaminant distributions and inventories. Geomorphic criteria used to distinguish pre-1943 sediments are discussed in section 5.6.2.2 of the Canyons core document (LANL 1997, 62316).

The Sigma Mesa Subarea releases are primarily from limited use of an experimental solar pond (surface impoundment) and soil contamination from salvaged equipment storage. Migration of COPCs down the slopes to the canyon bottom has not been investigated at this subarea. Therefore, a geomorphic understanding of the alluvial deposits at the toe of south-facing Mortandad Slope and the extent of contamination (if any) needs to be identified in sediment packages within specified channels where COPCs from the SWMUs and AOCs may have migrated.

### 3.2.2.3 Sample Collection and Analysis

Based on the assessment of the existing data and the subsequent data need conclusions presented in section 2.4.4, additional samples need to be collected from the Sigma Mesa Subarea. This section presents the number of samples that are needed from five separate drainage channels where COPC transport is possible and from previous locations where extent of contamination has not been investigated. The channels terminate in alluvial deposits before merging with the stream channel in the canyon bottom. The alluvial deposits and sediment packages in the channels will be characterized by geomorphic surveys and by chemical analyses of sediment collected from potentially contaminated geomorphic units.

Table 3.2-3 lists the minimum number of samples to be collected in numeric order. These are also presented on Figure 3.2.5. Additional samples may be collected if several geomorphic units are identified within the sample area.

**Table 3.2-3  
Proposed Samples for Sigma Mesa Subarea**

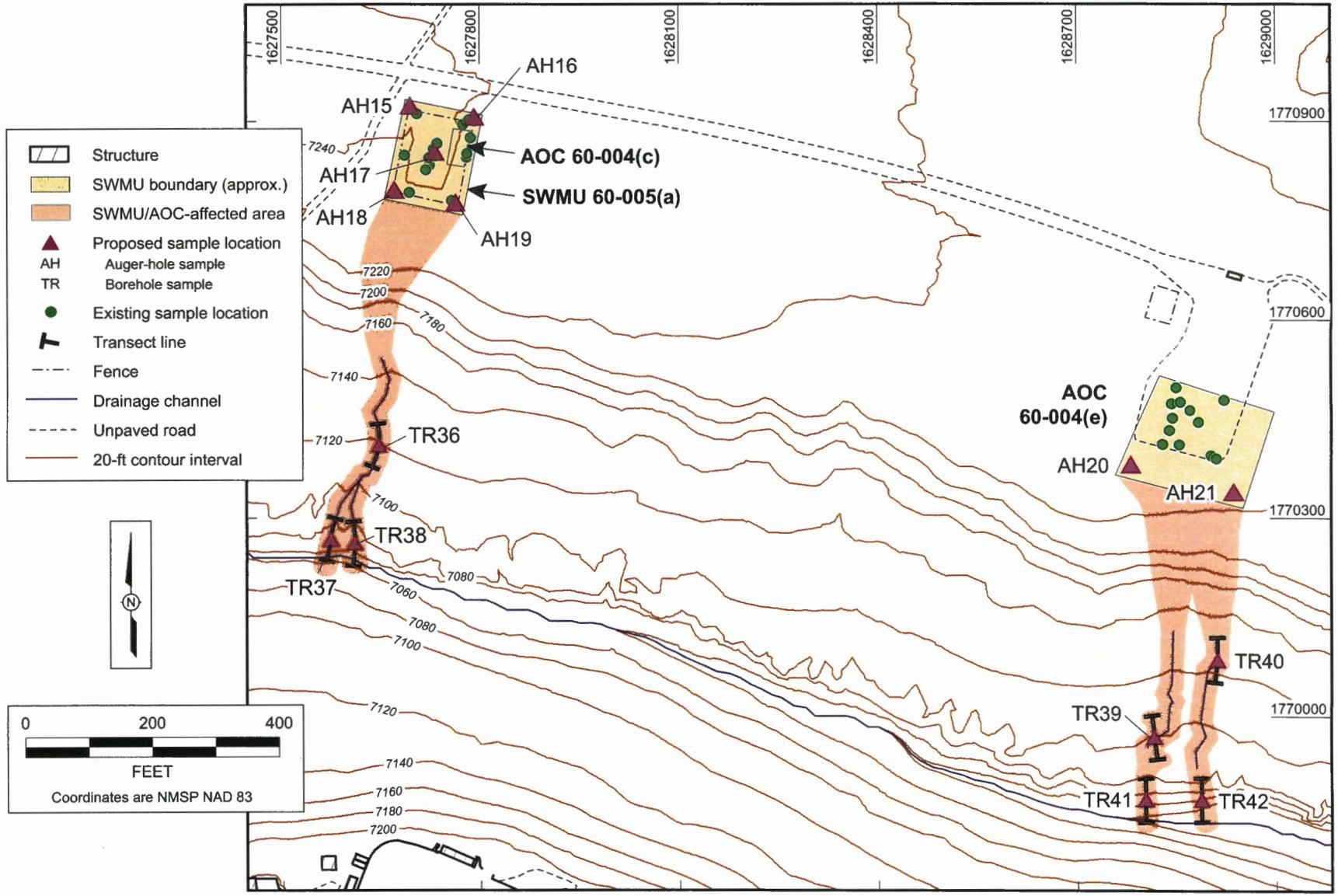
SWMU or AOC Number and Description	Description of Sample Locations (see Figure 3.2-5 for map)	Sample Number	Metals	SVOCs	VOCs	PCBs	Alpha Spectroscopy	Gamma Spectroscopy	Tritium
60-005(a), former surface impoundment	Dig three transects <sup>a</sup> or auger holes (TR36–TR38) for geomorphic characterization: TR36 on a bench and TR37–TR38 in alluvial deposits at base of slope; collect samples from two depths as determined by geomorphologist.	TR36	N/A <sup>c</sup>	N/A	N/A	N/A	2	2	2
		TR37	2	2	N/A	N/A	2	2	2
		TR38	2	2	N/A	N/A	2	2	2
	Hand auger in proximity to Location IDs 60-01214 (AH15 at 5-ft and 10-ft depths), <sup>b</sup> 60-01215 (AH16 at 5-ft and 10-ft depths), <sup>b</sup> 60-01208 (AH17 at 5-ft and 10-ft depths), <sup>b</sup> 60-01212 (AH18 at 5-ft and 10-ft depths), <sup>b</sup> and 60-01211 (AH19 at 5-ft and 10-ft depths) <sup>b</sup> .	AH15	2	N/A	N/A	N/A	2	2	2
		AH16	2	N/A	N/A	N/A	2	2	2
		AH17	2	2	N/A	N/A	2	2	2
		AH18	2	N/A	N/A	N/A	2	2	2
		AH19	2	N/A	N/A	N/A	2	2	2
	<b>Subtotal of Samples</b>			<b>14</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>16</b>
60-004(e), outdoor storage area	Dig four transects <sup>a</sup> or auger holes (TR39–TR42) for geomorphic characterization: TR39–TR40 on a bench and TR41–TR42 in alluvial deposits at base of slope; collect samples from two depths as determined by geomorphologist.	TR39	2	2	2	2	N/A	N/A	N/A
		TR40	2	2	2	2	N/A	N/A	N/A
		TR41	2	2	2	2	N/A	N/A	N/A
		TR42	2	2	2	2	N/A	N/A	N/A
	Hand auger in proximity to Location IDs 60-01010 (AH20 at 2-ft and 4-ft depths) <sup>b</sup> and 60-01015 (AH21 at 2-ft and 4-ft depths) <sup>b</sup> .	AH20	2	2	2	2	N/A	N/A	N/A
		AH21	2	2	2	2	N/A	N/A	N/A
<b>Subtotal of Samples</b>			<b>12</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total Minimum Number of Samples</b>			<b>26</b>	<b>18</b>	<b>12</b>	<b>12</b>	<b>16</b>	<b>16</b>	<b>16</b>

<sup>a</sup> Transect depth varies to include all post-Laboratory sediments/soils; it does not extend into tuff but can go as deep as the soil/tuff interface.

<sup>b</sup> Not collocated with previous samples.

<sup>c</sup> N/A = not applicable.

**AOC 60-004(c)** is a former container storage area (see Appendix A for AOC descriptions). No additional data are required for this AOC.



Source: R.L. Budd (RRES db), Map #60.101703, 101703  
Rev. for F3.2-5, TA-35 ISAP Addendum, 031804, cf

Figure 3.2-5. Proposed sampling locations at TA-60 in the Sigma Mesa Subarea

**AOC 60-004(e)** is a former 100 ft<sup>2</sup> outdoor storage area (see Appendix A for AOC descriptions). The assessment of data requirements confirms that AOC 60-004(e) needs data for TAL metals, SVOCs, and VOCs analyses collected from two additional depths to complete the data set for assessment.

Four transects (TR39–TR42) are proposed to define vertical and lateral extent in the alluvial deposits at a bench before the slope toe (TR39–TR40) and at the slope base (TR41–TR42). Samples will be collected from two depths as determined by the geomorphologist. Geomorphic mapping and subsequent sample collection shall be carried out as described in section 4.0, “Data Collection and Sampling Procedures,” in the SAP for Middle Mortandad/Ten Site Aggregate (LANL 2002, 73092). Two auger holes (AH20–AH21) are proposed, one each in proximity to previous locations 60-01010 and 60-01015, to be dug to a depth of 6 ft, with samples collected at 3-ft intervals to determine the vertical extent of contamination. Sampling procedures and SOPs for the shallow auger holes shall be implemented as stated in section 4.3, “Sample Collection,” of the SAP for Middle Mortandad/Ten Site Aggregate (LANL 2002, 73092). The sample analyses proposed for all locations is presented in Table 3.2-3.

**SWMU 60-005(a)** is an inactive Hypalon-lined solar pond (see Appendix A for SWMU descriptions). The assessment of data requirements confirms that SWMU 60-005(a) needs additional data for TAL metals, SVOCs, isotopic plutonium, isotopic uranium, gamma-emitting radionuclides, and tritium analyses to complete the data set for assessment.

Three transects (TR36–TR38) are proposed to define vertical and lateral extent in the alluvial deposits at the slope base. Samples will be collected from two depths as determined by the geomorphologist. Geomorphic mapping and subsequent sample collection shall be carried out as described in section 4.0, “Data Collection and Sampling Procedures,” of the SAP for Middle Mortandad/Ten Site Aggregate (LANL 2002, 73092). Five auger holes (AH15–AH19) are proposed, one each in proximity to previous locations 60-01208, 60-01211, 60-01212, 60-01014, and 60-01215 (collocation with prior locations not necessary), to be augered to a depth of 10 ft, with samples collected at 5-ft intervals for determining vertical extent of contamination. Sampling procedures and SOPs for the shallow auger holes shall be implemented as stated in section 4.3, “Sample Collection,” of the SAP for Middle Mortandad/Ten Site Aggregate (LANL 2002, 73092). The sample analyses proposed for all locations is presented in Table 3.2-3.

#### **4.0 DATA COLLECTION AND SAMPLING PROCEDURES**

*[Heading 4.0 is included here as a reference point.]*

#### **5.0 PROJECT MANAGEMENT**

*[Heading 5.0 is included here as a reference point.]*

#### **6.0 REFERENCES**

*The following list includes only those documents that were cited in this addendum and not cited in the original SAP. See the references list for the original SAP for any documents not listed here. Parenthetical information following each reference provides the author, publication date, and ER ID number. This information is also included in text citations. ER ID numbers are assigned by the RRES-RS Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the RRES-RS project reference set titled “Reference Set for OU 1129.”*

*Copies of the reference sets are maintained at the NMED Hazardous Waste Bureau; the DOE Los Alamos Site Office; US Environmental Protection Agency, Region 6; and RRES-RS. The sets were developed to ensure that the administrative authority has all material needed to review this document, and they are updated periodically as needed. Documents previously submitted to the administrative authority are not included.*

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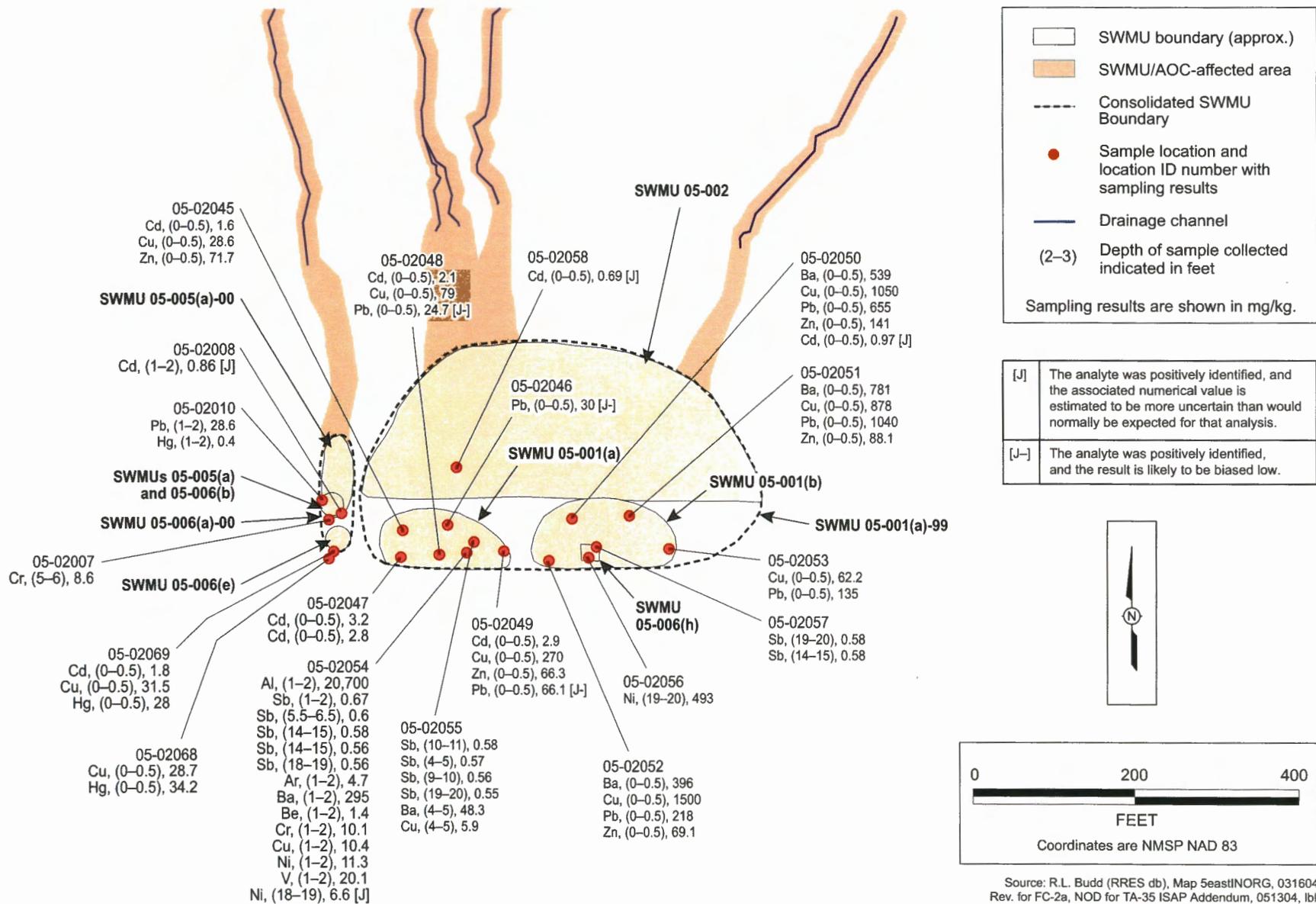
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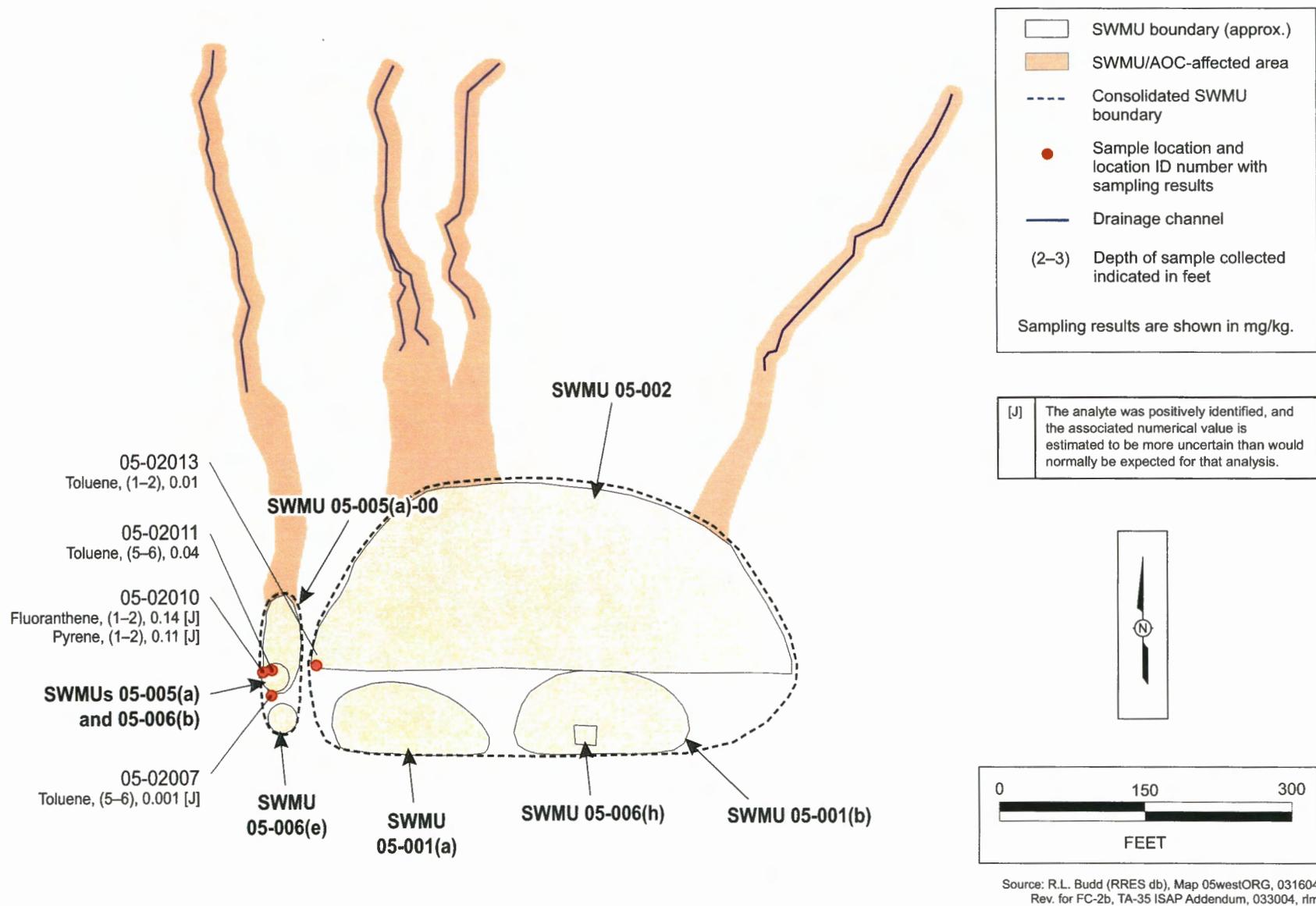
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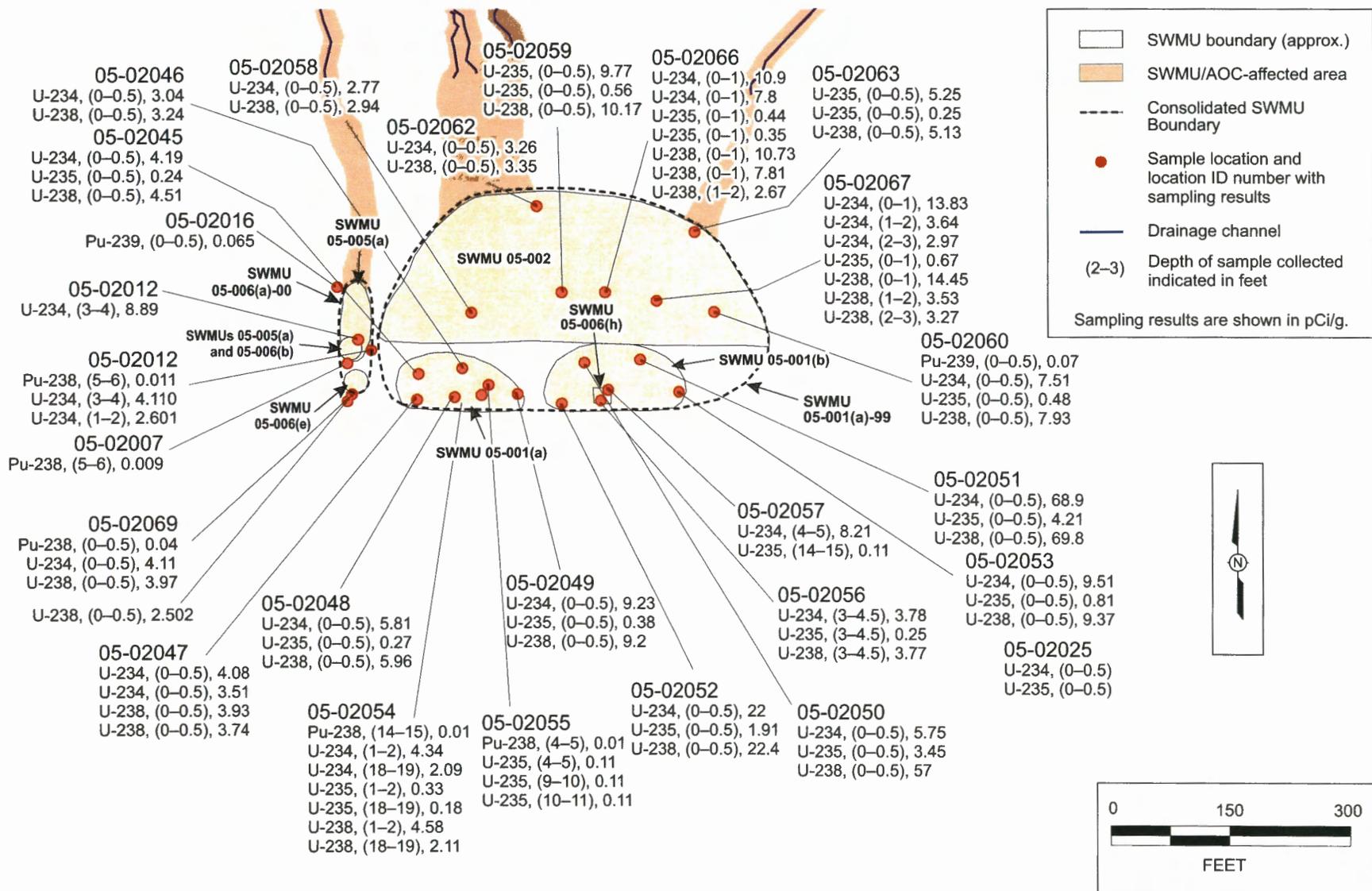
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Revised Figure C-2a. Inorganic chemicals detected above background in sampling locations at TA-05 (east) in the East Ten Site Slope Subarea

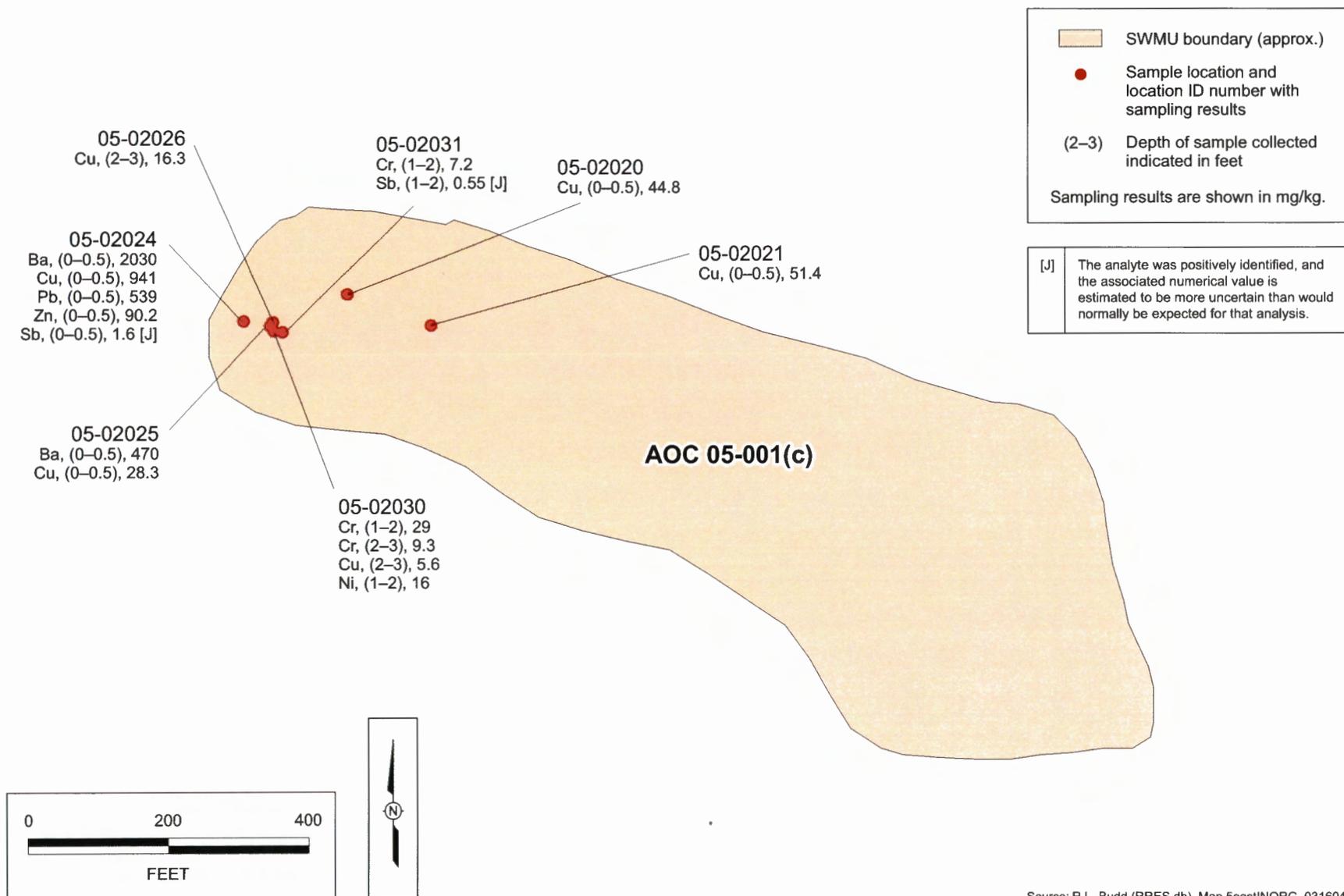


Revised Figure C-2b. Organic chemicals detected above background in sampling locations at TA-05 (west) in the East Ten Site Slope Subarea

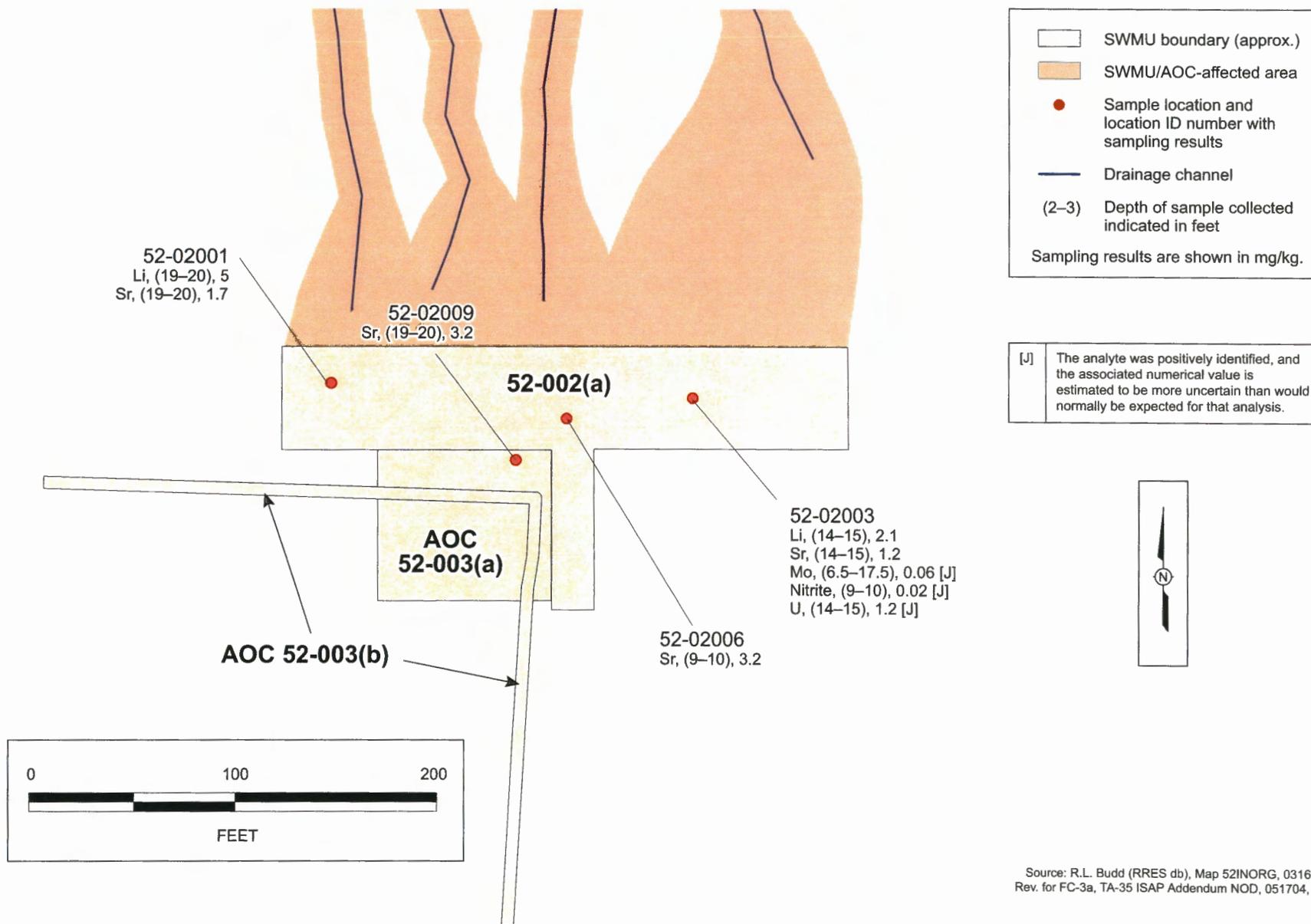


Revised Figure C-2c. Radionuclides detected above background in sampling locations at TA-05 (west) in the East Ten Site Slope Subarea

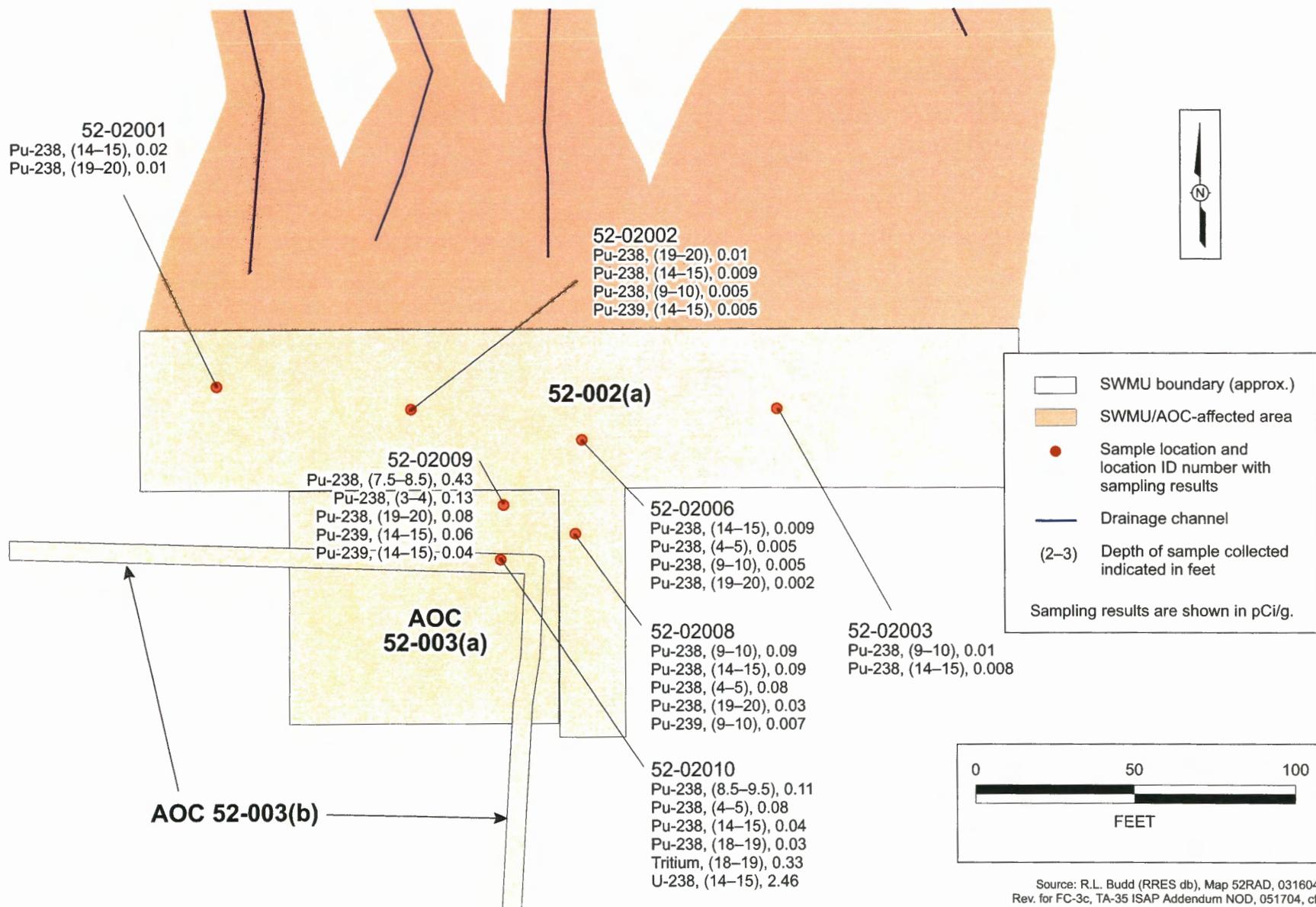
Source: R.L. Budd (RRES db), Map 05westRAD, 031604 Rev. for FC-2c, TA-35 ISAP Addendum NOD, 051704, cf



**Revised Figure C-2d. Inorganic chemicals detected above background in sampling locations at TA-05 (east) in the East Ten Site Slope Subarea**



Revised Figure C-3a. Inorganic chemicals detected above background in sampling locations at TA-52



Revised Figure C-3c. Radionuclides detected above background in sampling locations at TA-52 in the East Ten Site Slope Subarea

# **Attachment B**

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*Hard Copies of References*

United States GovernmentDepartment of Energy**memorandum**Albuquerque Operations Office  
Los Alamos Area Office  
Los Alamos, New Mexico 87544

DATE: OCT 11 1995

REPLY TO  
ATTN OF: LAAMEP:cgf:NFA Approval

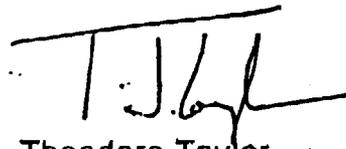
SUBJECT: NFA Permit Modification

TO: H. Jansen, ER Program Manager, UC-LANL, MS M992

ERID 50023  
ERID 50023

At your request, the Department of Energy (DOE) Los Alamos Area Office (LAAO) Environmental Restoration (ER) Program staff has reviewed the March 1995 Permit Modification request that was submitted to the Environmental Protection Agency (EPA). You requested that DOE concur in the determination that the non-HSWA units (Areas of Concern [AOC]), included in the modification for completeness, could be removed from further consideration by the UC ER Project. This memo is to inform you that DOE/LAAO does concur in the determination of no further action for the AOCs listed in the March 1995 permit modification request.

If you have any questions, please call me at 665-7203 or Court Fesmire at 665-4718.



Theodore Taylor  
Program Manager  
Environmental Restoration Program

cc:  
T. Taylor, LAAO, LAAMEP, MS A316  
C. Fesmire, LAAO, LAAMEP, MS A316  
A. Tamayo, LAAMEP, MS A316  
D. Griswold, AL-ERPO, MS A906  
E. Merrill, EM-452, HQ  
D. McInroy, UC-LANL, EM/ER, MS M992  
RPF, MS M707  
File Code 1.4.2.6.6.1.1.1

FYI  
cy: FPLs  
Roy B.  
JANET H.  
~~MARGE S.~~

DM

2

United States Government

Department of Energy

# memorandum

Albuquerque Operations Office  
Los Alamos Area Office  
Los Alamos, New Mexico 87544

DATE: NOV 28 1995

ERID 51501

REPLY TO  
ATTN OF: LAAO:EP:TJT:NFA9/95:1.4.2.6.6.1.1  
SUBJECT:

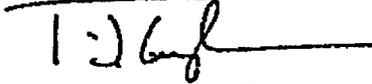
Concurrence in No Further Action Recommendations

TO: J. Jansen, Project Manager, UC-LANL, EM/ER, MS M992

The LAAO Environmental Restoration Team has reviewed the No Further Action (NFA) recommendations for 150 Areas of Concern (AOC) contained in the September 28, 1995 Request for Permit Modification that was submitted to the U.S. Environmental Protection Agency. LAAO concurs in your NFA recommendation for 147 of the 150 AOCs. For three AOCs, 16-023(a), 16-032(b), and C-16-027 LAAO has minor comments which must be resolved. These comments are attached.

Please consider the comments and provide a response at your earliest convenience.

If you have questions, please call me at 665-7203.



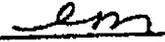
Theodore J. Taylor  
Program Manager  
Environmental Restoration Program

### Attachment

- cc w/ attachment:
- T. Taylor, EP, LAAO
- A. Tamayo, EP, LAAO
- J. White, ESH-19, UC-LANL, MS K498
- N. Naraine, EM-45, HQ
- D. Griswold, ERD, AL, MS A906

~~REPRODUCTION PROHIBITED~~

- cc w/o attachment:
- J. Vozella, AAMEP, LAAO
- T. Baca, EM/DO, UC-LANL, MS J591
- G. Rael, ERD, AL, MS A906
- W. Spurgeon, EM-45, HQ

Received by ER-RPF  
NOV 05 1995  


11-140114-5-0514

Ted

LOS ALAMOS  
AREA OFFICE  
(LAAO)

DOCUMENT REVIEW/RESPONSE

DOC TITLE: Request for Permit Mod, Sep 1995, AOC review.

ITEM #	PAGE, SECTION #, OR DRAWING #.	COMMENTS	RESPONSE
1	Pg 2-24, Sect. 2.2.1.4	First paragraph states that through an archive search that the location of this SWMU can not be established, but then it goes on to state that extensive sampling will be carried out in the general area of this SWMU and that the sampling would most likely identify any residual contamination, and if contamination exists, then phase II sampling would occur. If this SWMU is to be NFA, then the NFA decision should be stand alone and dependent/contingent on future sampling results.	
2	Pg 2-24, Sect. 2.2.1.5	Was a site visit ever conducted at building TA-16-148 to verify that the sump never existed? If so, then state that a site visit confirmation that the sump never existed.	
3	Pg 2-26, Sect. 2.2.1.13	Is it possible for a "Plumbing Shop" not to have used, stored, disposed of hazardous substances?	

REVIEWED BY: Joseph Most, DOE/LAAO, (505)667-5808

DATE: 11/27/95

REVIEWED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

IN - HOLDING - OUT

IN - HOLDING - OUT

ER 10 59358



29

State of New Mexico  
ENVIRONMENT DEPARTMENT  
Hazardous & Radioactive Materials Bureau  
2044 Galisteo  
P.O. Box 26110  
Santa Fe, New Mexico 87502  
(505) 827-1557  
Fax (505) 827-1544



GARY E. JOHNSON  
GOVERNOR

MARK E. WEIDLER  
SECRETARY

EDGAR T. THORNTON, III  
DEPUTY SECRETARY

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

December 8, 1997

Mr. Theodore Taylor, Program Manager  
Los Alamos Area Office  
Department of Energy  
528 35th Street  
Los Alamos, New Mexico 87544

ER PROJECT OFFICE RECEIVED DEC 19 1997

- Copies:
- Janet H
- Don M.
- Pat S.
- Tracy O

orig - Galia  
cc: Tosi

Dr. James Brown, Director  
Los Alamos National Laboratory  
P.O. Box 1663, Mail Stop A100  
Los Alamos, New Mexico 87545

RE: Approval: Class III permit modification to remove three Solid Waste Management Units from the Los Alamos National Laboratory RCRA permit

Dear Mr. Taylor and Dr. Brown:

This letter is to inform you that the New Mexico Environment Department (NMED) approves the Class III permit modification to the US Department of Energy/Los Alamos National Laboratory (DOE/LANL) Resource Conservation and Recovery Act (RCRA) permit, Permit No. NM0890100515, proposed in requested in a No Further Action Proposal dated September 30, 1996. The modification is effective as of this date.

The modification removes three (3) Solid Waste Management Units from Tables A and C of Permit Module VIII, the Hazardous and Solid Waste Amendments (HSWA) module. A list of the ER sites removed is listed in Attachment A. Also enclosed please find the revised Tables A and C replacement pages for the tables currently in Module VIII.

One written comment was received by NMED regarding its proposal to approve this permit modification. These comments are addressed in the enclosed Response to Comments.

Received by ER-RPI  
JUN 29 1998  
*[Signature]*

ER ID # 59676.1  
ER ID 59676.1

United States Government

# memorandum

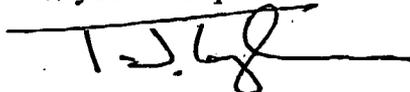
Department of Energy  
Albuquerque Operations Office  
Los Alamos Area Office  
Los Alamos, New Mexico 87544

DATE: September 14, 1998  
REPLY TO  
ATTN OF: LAAO:E:TJT:PM98:1.4.2.63.3.10  
SUBJECT: Acceptance of Performance Measures  
TO: J. Canepa, Program Manager, EM/ER, UC-LANL, MS M992

Reference: Memorandum EM/ER:98-271, dated August 13, 1998

The Department of Energy (DOE) has reviewed the referenced document, and under General Assumption 5 of the Fiscal Year 1998 Performance Measures DOE accepts the document. Acceptance of the document means that the University of California is credited with completing 36 potential release sites (PRS) under Functional Area A.2.

If you have questions or concerns, please call me at 665-7203.



Theodore J. Taylor  
Environmental Restoration Program Manager

cc:  
T. Taylor, E, LAAO  
J. Vozella, AAME, LAAO  
G. Rael, ERD, AL, MS A906  
T. Trujillo, ERD, AL, MS A906  
T. Baca, EM-DO, UC-LANL, MS J591  
D. Boak, EM/ER, UC-LANL, MS M992  
RPF, MS M707  
T. Longo, EM-45, HQ  
file:Juliepm

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# Los Alamos National Laboratory

UNIVERSITY OF CALIFORNIA



Environmental Restoration Project  
MS M992  
Los Alamos, New Mexico 87545  
505-667-0808/FAX 505-665-4747

Date: August 13, 1998

Refer to: EM/ER:98-271

ERID 59972

Mr. Ted Taylor  
US Department of Energy  
Los Alamos Area Office, MS A316  
Los Alamos, NM 87545

**SUBJECT: DOCUMENTATION OF ECOLOGICAL RISK ASSESSMENT AND OTHER APPLICABLE REGULATIONS AND STANDARDS FOR 36 ADMINISTRATIVE NFA PROPOSALS (FUNCTIONAL AREA A.2 PERFORMANCE MEASURE)**

Dear Ted:

Enclosed is a copy of another report we have written to partially satisfy Functional Area A.2. of the Fiscal Year 1998 (FY98) Performance Measures. Specifically, this report documents the review of ecological risk and other applicable regulations and standards for 36 potential release sites (PRSs) that have been proposed for no further action (NFA) in previous years. These sites are in the Hazardous Solid Waste Amendments Permit Module VIII, and were proposed for NFA within permit modification requests submitted to the New Mexico Environment Department (NMED) in March and September 1995. NMED has partially concurred with this request and issued a Notice of Determination on December 10, 1996. These 36 sites are a subset of those that the State has concurred with and were not included in any other deliverable intended to satisfy Performance Measure A.2.

These PRSs have been evaluated for all concerns and upon concurrence from your office. We do not anticipate these sites will need any further investigation. Please let us know of the status of your concurrence. To date, Los Alamos National Laboratory has evaluated and submitted 119 sites to DOE to meet Performance Measure A.2, continued work on NFA recommendations from work conducted prior to FY98.

Should you have any questions, please contact Dave McInroy at 667-0819.

Sincerely,

Julie A. Canepa, Program Manager  
Environmental Restoration Project

JC/DM/rfr

AUG 19 1998  
777A

# DOCUMENTATION OF ECOLOGICAL RISK ASSESSMENT AND OTHER APPLICABLE REGULATIONS AND STANDARDS FOR 36 ADMINISTRATIVE NO FURTHER ACTION PROPOSALS

## 1.0 INTRODUCTION

### 1.1 Background

Prior to Fiscal Year 1998 (FY98), the Los Alamos National Laboratory (the Laboratory) Environmental Restoration (ER) Project had investigated 1211 of its 2123 potential release sites (PRSs) for possible contamination from historical operations at the Laboratory. Based on human health evaluations of contaminant concentrations in soil, the Project determined that these sites need no further investigation. The written proposals for no further action determination have been presented to the Administrative Authority<sup>1</sup> (AA) for concurrence. Of the 1211 sites proposed for no further action, 578 of the proposals were based on administrative-type criteria, meaning that the determinations were based primarily on acceptable knowledge information supplemented with site visits and interviews. Subsequently, the sites were evaluated for ecological risk and for concerns regarding other applicable regulations and standards. Based on the results of the evaluation, this report presents supplemental written documentation supporting the no further action proposals. The other applicable regulations and standards investigated for this report include surface water and groundwater standards, air emissions, and underground storage tank regulations.

The AA makes the final determination on the no further action proposal. A determination by the AA that a site has not met the no further action criteria and therefore needs further investigation does not necessarily mean that remedial action is required. It can indicate that more information or further evaluation is needed. The results of any additional investigation may potentially lead to another proposal of no further action, a remedial action, a corrective measures study, or other appropriate actions.

This report includes a discussion of the no further action process and criteria for human health evaluations. It also describes the process pursued to evaluate ecological risk and the concerns regarding other applicable regulations and standards for 36 PRSs. The Laboratory's ER Project has additional PRSs that have been proposed for no further action based on administrative criteria. These PRSs, as well as the other PRSs that have been proposed for no further action under Criteria 4 and 5, will be evaluated for ecological risks and other applicable regulations and standards and will be documented in future reports. The no further action proposals for the PRSs presented in this report include only those PRSs that have received AA concurrence for the ER Project's no further action proposals based on human health evaluations.

### 1.2 NFA Process and Criteria

Potential release sites have been proposed for no further action for human health evaluations in final reports written to demonstrate that sufficient acceptable knowledge information exists, site characterization data are complete, or cleanup confirmation data are complete. Documentation of the no further action proposal for each PRS must meet one or more of five criteria (listed below). The New Mexico Environment Department (NMED), the Environmental Protection Agency (EPA), Region 6, the Department of Energy (DOE) Los Alamos Area Office and Albuquerque Field Office, and the Laboratory have agreed upon these criteria.

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<sup>1</sup> The New Mexico Environment Department Hazardous and Radioactive Materials Bureau is the Administrative Authority for those PRSs listed on the Laboratory's Hazardous and Solid Waste Amendments (HSWA) Module of the Resource Conservation and Recovery Act (RCRA), Operating Permit. The Department of Energy is the Administrative Authority for all other PRSs.

- No Further Action Criterion 1 The Solid Waste Management Unit/Area of Concern (SWMU/AOC) cannot be located, does not exist, or is a duplicate SWMU/AOC
- No Further Action Criterion 2 The SWMU/AOC has never been used for the management (i.e. generation, treatment, storage, and/or disposal) of RCRA solid or hazardous wastes and/or constituents or other CERCLA hazardous substances.
- No Further Action Criterion 3 No release to the environment has occurred nor is likely to occur in the future from the SWMU/AOC.
- No Further Action Criterion 4 A release from the SWMU/AOC has occurred, but the SWMU/AOC was characterized and/or remediated under another authority which adequately addresses RCRA corrective action, and documentation, such as a closure letter, is available.
- No Further Action Criterion 5 The SWMU/AOC has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

An administrative no further action proposal based on Criteria 1\_3 is supported by acceptable knowledge information, which indicates that there has not been a release at the site, thus precluding the need for characterization and/or remediation. However, any of the five criteria can be supported with confirmatory sampling when necessary.

## 2.0 Evaluation of Ecological Risk and Other Applicable Regulations and Standards

### 2.1 Ecological Risk Screening and Assessment

An ecological risk assessment evaluates whether adverse ecological effects are occurring or may occur as a result of exposure to one or more stressors. The functions of an ecological risk assessment are to document whether actual or potential ecological risks exist at a site; identify which contaminants present at a site pose an ecological risk; and generate data to be used in evaluating cleanup options. The first step in an ecological risk assessment is the risk screening assessment. For this step, site-specific information is necessary for determining the nature and extent of contamination and for characterizing ecological receptors.

The screening process, described in the Laboratory's 1998 screening level risk assessment document, is composed of three parts: the scoping evaluation, the screening evaluation, and the risk management decision, which is based on an interpretation of the screening results. The first step of the scoping evaluation is to determine if the potential release site (PRS) is a candidate for an administrative no further action (NFA) decision based on the following NMED Criteria:

- NFA criterion 1 (site does not exist)
  - NFA criterion 2 (site never used for solid waste or hazardous wastes)
  - NFA criterion 3 (documentation of no release through an evaluation of process knowledge)
- The ER Project personnel provide the justification for administrative NFA recommendations. Given one of the above criteria, environmental sample information is usually not required, and ecological evaluations are unnecessary (LANL 1998, 1428).

A no further action proposal based on Criterion 4 or 5 indicates that characterization and/or remediation was necessary before proposing no further action based on human health evaluations. Depending on the site history, knowledge about the site, and other site-specific information, an ecological risk screening determination may be necessary. If an ecological risk screening is performed, it is then documented in future reports.

None of the sites presented in this report require an ecological risk screening assessment. This conclusion is based on the supporting documentation for the original no further action proposal based on

the human health evaluation. For example, several of the original proposals were based on the fact that the site never existed. It is clear that an ecological risk screening assessment would not be necessary in this example. The remaining sites have similar documentation supporting the no further action proposal.

## **2.2 Evaluation of Other Applicable Regulations and Standards**

The other applicable regulations and standards considered for this report include an evaluation of the sites regarding those standards which would be appropriate to incorporate into the development of a remediation goal or a comparative standard to determine the necessity for remediation. These would include evaluations of the sites regarding surface water and groundwater standards, air emissions, and underground storage tank regulations, where applicable. The original no further action proposals were based on human health evaluations of potential soil contamination. By considering the regulations and standards associated with surface water, groundwater, and air, a complete human health and ecological risk evaluation can be made and documented. Specifically, standards for maximum contaminant levels for drinking water and standards for wildlife habitat and livestock watering are considered as well as safe emissions standards for air. In addition, for those PRSs that are underground storage tanks, Subtitle I under 40 CFR (Code of Federal Regulations) Part 280 of RCRA, has very specific regulations that must be followed.

As with the ecological risk screening assessment previously described, in general, sites recommended for no further action based on the no further action Criteria 1 and 3, do not require an evaluation for these other applicable regulations and standards. For example, if the site never existed, or if there was no release to the environment, the other applicable regulations and standards do not apply. However, under Criteria 2, a site can be proposed for no further action based on a human health evaluation of soil because no RCRA solid or hazardous wastes and/or constituents or other CERCLA hazardous substances were managed. However, the applicable regulations and standards for surface water must consider whether there is debris in a watercourse regardless of whether it is a RCRA solid or hazardous waste and/or constituent or CERCLA hazardous substance. As with ecological risk, an evaluation of the sites must be made regarding the applicable regulations and standards of surface water, groundwater, and air emissions, as well as other potential regulations and standards depending on the site history, knowledge about the site, and other site-specific information.

All of the sites presented in this report have met the requirements of the surface water and groundwater standards, air emissions, and underground storage tank regulations based on the supporting documentation for the original no further action proposals for the human health evaluations.

## **3.0 Sites Proposed for No Further Action Based on Ecological Risk Assessment and Other Applicable Regulations and Standards**

The enclosed table lists the sites included in the HSWA Module that have been proposed in reports before FY98 and have received concurrence from NMED for no further action based on human health evaluations of contaminant concentrations in soil based on acceptable knowledge information (Criteria 1-3).

The table includes

- the criteria under which the no further action proposal was made;
- the PRS number;
- a brief description of the site;
- the former Operable Unit (OU) number in which the PRS was located;

- the document<sup>2</sup> which has the original no further action proposal;
- the date of that document;
- the date of the Class 3 permit modification in which the PRS was formally submitted to the AA for no further action;
- a brief justification for the no further action proposal; and
- the current status of the no further action proposal.

#### 4.0 References

LANL (Los Alamos National Laboratory), May 1998 "Screening Level Ecological Risk Assessment Approach for the Environmental Restoration Project at Los Alamos National Laboratory" (Draft), Los Alamos National Laboratory Report LA-UR-98-1822, ER ID Number 57916, Los Alamos, New Mexico. (LANL 1998, 1428)

##### Requests for Permit Modification

LANL (Los Alamos National Laboratory), March 1995. "Request for Permit Modification, Units Proposed for NFA," Los Alamos National Laboratory Report LA-UR-95-767, ER ID Number 45365, Los Alamos, New Mexico. (LANL 1995, 1249)

LANL (Los Alamos National Laboratory), September 1995. "Request for Permit Modification, Units Proposed for NFA," Los Alamos National Laboratory Report LA-UR-95-3319, ER ID Number 51878, Los Alamos, New Mexico. (LANL 1995, 1279)

LANL (Los Alamos National Laboratory), September 1996. "Request for Permit Modification, Units Proposed for NFA," Volumes I and II, Los Alamos National Laboratory Report LA-UR-96-3357, ER ID Numbers 55035, 55036, Los Alamos, New Mexico. (LANL 1996, 1420)

##### RFI Work Plans

LANL (Los Alamos National Laboratory), May 1991. "TA-21 Operable Unit RFI Work Plan for Environmental Restoration," Volumes I-III, Los Alamos National Laboratory Report LA-UR-91-962, ER ID Numbers 7528, 7529, 7680, Los Alamos, New Mexico. (LANL 1991, 0689)

LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1071," Los Alamos National Laboratory Report LA-UR-92-810, ER ID Number 52857, Los Alamos, New Mexico. (LANL 1992, 0781)

LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1078," Los Alamos National Laboratory Report LA-UR-92-368, ER ID Number 43454, Los Alamos, New Mexico. (LANL 1992, 0782)

LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1079," Los Alamos National Laboratory Report LA-UR-92-850, ER ID Number 7668, Los Alamos, New Mexico. (LANL 1992, 0736)

LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1122," Los Alamos National Laboratory Report LA-UR-92-925, ER ID Number 7671, Los Alamos, New Mexico. (LANL 1992, 0784)

<sup>2</sup> The pages for the location of the original proposal are included in this column as well as a reference for each document. The list of references can be found at the end of this report.

LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1129," Los Alamos National Laboratory Report LA-UR-92-800, ER ID Number 7666, Los Alamos, New Mexico. (LANL 1992, 0785)

LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1147," Los Alamos National Laboratory Report LA-UR-92-969, ER ID Number 7672, Los Alamos, New Mexico. (LANL 1992, 0787)

LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1148," Los Alamos National Laboratory Report LA-UR-92-855, ER ID Number 7669, Los Alamos, New Mexico. (LANL 1992, 0788)

LANL (Los Alamos National Laboratory), May 1993. "RFI Work Plan for Operable Unit 1093," Los Alamos National Laboratory Report LA-UR-93-422, ER ID Number 15310, Los Alamos, New Mexico. (LANL 1993, 1085)

LANL (Los Alamos National Laboratory), June 1993. "RFI Work Plan for Operable Unit 1098," Los Alamos National Laboratory Report LA-UR-92-3825, ER ID Number 15314, Los Alamos, New Mexico. (LANL 1993, 1086)

LANL (Los Alamos National Laboratory), July 1993. "RFI Work Plan for Operable Unit 1086," Los Alamos National Laboratory Report LA-UR-92-3968, Los Alamos, New Mexico. (LANL 1993, 1087)

LANL (Los Alamos National Laboratory), June 1993. "RFI Work Plan for Operable Unit 1130," Los Alamos National Laboratory Report LA-UR-93-1152, ER ID Number 15313, Los Alamos, New Mexico. (LANL 1993, 1088)

LANL (Los Alamos National Laboratory), June 1993. "RFI Work Plan for Operable Unit 1132," Los Alamos National Laboratory Report LA-UR-93-768, ER ID Number 15316, Los Alamos, New Mexico. (LANL 1993, 1089)

LANL (Los Alamos National Laboratory), July 1993. "RFI Work Plan for Operable Unit 1114," Los Alamos National Laboratory Report LA-UR-93-1000, ER ID Number 20947, Los Alamos, New Mexico. (LANL 1993, 1090)

LANL (Los Alamos National Laboratory), August 1993. "RFI Work Plan for Operable Unit 1111," Los Alamos National Laboratory Report LA-UR-93-2166, ER ID Number 26068, Los Alamos, New Mexico. (LANL 1993, 1091)

LANL (Los Alamos National Laboratory), July 1993. "RFI Work Plan for Operable Unit 1157," Los Alamos National Laboratory Report LA-UR-93-1230, ER ID Number 20949, Los Alamos, New Mexico. (LANL 1993, 1092)

LANL (Los Alamos National Laboratory), August 1993. "RFI Work Plan for Operable Unit 1140," Los Alamos National Laboratory Report LA-UR-93-1940, ER ID Number 31750, Los Alamos, New Mexico. (LANL 1993, 1093)

LANL (Los Alamos National Laboratory), July 1993. "RFI Work Plan for Operable Unit 1082," Los Alamos National Laboratory Report LA-UR-93-1196, ER ID Number 20948, Los Alamos, New Mexico. (LANL 1993, 1094)

LANL (Los Alamos National Laboratory), May 1994. "RFI Work Plan for Operable Unit 1085," Los Alamos National Laboratory Report LA-UR-94-1033, ER ID Number 32033, Los Alamos, New Mexico. (LANL 1994, 1156)

LANL (Los Alamos National Laboratory), May 1994. "RFI Work Plan for Operable Unit 1100," Los Alamos National Laboratory Report LA-UR-94-1097, ER ID Number 38879, Los Alamos, New Mexico. (LANL 1994, 1157)

LANL (Los Alamos National Laboratory), May 1994. "RFI Work Plan for Operable Unit 1136," Los Alamos National Laboratory Report LA-UR-94-1244, ER ID Number 34754, Los Alamos, New Mexico. (LANL 1994, 1158)

LANL (Los Alamos National Laboratory), May 1994. "RFI Work Plan for Operable Unit 1154," Los Alamos National Laboratory Report LA-UR-94-1096, ER ID Number 34757, Los Alamos, New Mexico. (LANL 1994, 1158)

LANL (Los Alamos National Laboratory), May 1994. "RFI Work Plan for Operable Unit 1082," Addendum 1, Los Alamos National Laboratory Report LA-UR-94-1580, ER ID Number 39440, Los Alamos, New Mexico. (LANL 1994, 1158)

LANL (Los Alamos National Laboratory), July 1995. "RFI Work Plan for Operable Unit 1114, Addendum 1," Los Alamos National Laboratory Report LA-UR-95-731, Los Alamos, New Mexico. (LANL 1995, 1291)

Table 1  
HSWA Module Potential Release Sites Proposed for No Further Action Prior to FY98

NFA Criteria	PRS Number	PRS Description	Former OU	NFA Document	Document Date	Permit Mod Date	NFA Justification	NFA Status
5	00-005	Landfill	1071	Workplan	10/16/92	3/28/95	Site char'tem under current appl'ed state regulations	RMED Approval of Permit Mod 12/10/96
5	01-001(n)	Septic tank 276	1078	Workplan	5/20/92	3/28/95	Site char'tem under current appl'ed state regulations	RMED Approval of Permit Mod 12/10/96
4	03-001(a)	<90 day storage	1114	Workplan	7/7/93	9/29/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
4	03-001(b)	Satellite Accumulation Area	1114	Workplan	7/7/93	9/29/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
4	03-001(c)	<90 day storage	1114	Workplan	7/7/93	9/29/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
4	03-002(b)	Storage area	1114	Workplan	7/7/93	9/29/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
4	03-012(a)	One-time spill	1114	Workplan	7/7/93	3/28/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
5	03-020(a)	Disposal pit	1114	Workplan	7/7/93	3/28/95	Site char'tem under current appl'ed state regulations	RMED Approval of Permit Mod 12/10/96
4	03-035(a)	Underground tank	1114	Workplan	7/7/93	9/29/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
4	03-035(b)	Underground storage tank	1114	Workplan	7/7/93	9/29/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
4	14-004(b)	Storage area	1085	Workplan	5/23/94	9/29/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
4	15-014(m)	Outfall (still active)	1085	Workplan	7/1/93	9/29/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
4	16-010(g)	Waste water treatment facility	1082	Workplan	7/16/93	3/28/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
4	16-012(d)	Satellite Accumulation Area	1082	Workplan	7/6/94	3/28/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
4	16-012(i)	Satellite Accumulation Area	1082	Workplan	7/6/94	3/28/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
4	16-012(j)	Satellite Accumulation Area	1082	Workplan	7/6/94	3/28/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
4	16-012(k)	Satellite Accumulation Area	1082	Workplan	7/6/94	3/28/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
4	16-012(l)	Satellite Accumulation Area	1082	Workplan	7/6/94	3/28/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
4	16-012(m)	Satellite Accumulation Area	1082	Workplan	7/6/94	3/28/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
4	16-012(n)	Satellite Accumulation Area	1082	Workplan	7/6/94	3/28/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
4	16-012(p)	Container storage	1092	Workplan	7/6/94	3/28/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
4	16-012(t)	Satellite Accumulation Area	1082	Workplan	7/6/94	3/28/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
4	16-012(u)	Satellite Accumulation Area	1082	Workplan	7/6/94	3/28/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
4	16-012(v)	Satellite Accumulation Area	1082	Workplan	7/6/94	3/28/95	Site characterized/mediated under another authority	RMED Approval of Permit Mod 12/10/96
5	21-024(j)	Septic system	1106	RFI Report	2/28/94	9/29/95	Site char'tem under current appl'ed state regulations	RMED Approval of Permit Mod 12/10/96

Table 1  
 HSWA Module Potential Release Sites Proposed for No Further Action Prior to FY98

5	21-024(k)	Septic system	1106	RFI Report	2/28/94	9/29/95	Site char/rem under current appl fed/state regulations	NMED Approval of Permit Mod 12/10/96
5	21-024(m)	Drain line	1106	RFI Report	2/28/94	9/29/95	Site char/rem under current appl fed/state regulations	NMED Approval of Permit Mod 12/10/96
5	21-024(n)	Drain line	1106	RFI Report	2/28/94	9/29/95	Site char/rem under current appl fed/state regulations	NMED Approval of Permit Mod 12/10/96
5	21-024(o)	Drain line	1106	RFI Report	2/28/94	9/29/95	Site char/rem under current appl fed/state regulations	NMED Approval of Permit Mod 12/10/96
5	21-027(b)	Outfalls	1106	RFI Report	2/28/94	9/29/95	Site char/rem under current appl fed/state regulations	NMED Approval of Permit Mod 12/10/96
5	21-027(d)	Drain line	1106	RFI Report	2/28/94	9/29/95	Site char/rem under current appl fed/state regulations	NMED Approval of Permit Mod 12/10/96
5	33-004(d)	Septic system	1122	RFI Report	1/26/95	9/29/95	Site char/rem under current appl fed/state regulations	NMED Approval of Permit Mod 12/10/96
5	33-004(g)	Outfall	1122	RFI Report	1/26/95	9/29/95	Site char/rem under current appl fed/state regulations	NMED Approval of Permit Mod 12/10/96
5	33-004(h)	Outfall	1122	RFI Report	1/26/95	9/29/95	Site char/rem under current appl fed/state regulations	NMED Approval of Permit Mod 12/10/96
5	52-001(a)	UHTREX equip	1129	Workplan	5/20/92	3/28/95	Site char/rem under current appl fed/state regulations	NMED Approval of Permit Mod 12/10/96
5	52-001(b)	UHTREX equip	1129	Workplan	5/20/92	3/28/95	Site char/rem under current appl fed/state regulations	NMED Approval of Permit Mod 12/10/96
5	52-001(c)	UHTREX equip	1129	Workplan	5/20/92	3/28/95	Site char/rem under current appl fed/state regulations	NMED Approval of Permit Mod 12/10/96



GARY E. JOHNSON  
GOVERNOR

16

State of New Mexico  
ENVIRONMENT DEPARTMENT  
Hazardous & Radioactive Materials Bureau  
2044 Galisteo Street  
P.O. Box 26110  
Santa Fe, New Mexico 87502  
(505) 827-1557  
Fax (505) 827-1544



PETER MAGGIORE  
SECRETARY

RECEIVED - PROJECT OFFICE

63042

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

December 23, 1998

ER PROJECT OFFICE RECEIVED JAN 0 4 1999

Mr. Theodore Taylor, Program Manager  
Los Alamos Area Office  
Department of Energy  
528 35th Street  
Los Alamos, New Mexico 87544

Dr. John C. Browne, Director  
Los Alamos National Laboratory  
P.O. Box 1663, Mail Stop A100  
Los Alamos, New Mexico 87545

RE: Approval: Class III permit modification to remove ninety-nine (99) Solid Waste Management Units from the Department of Energy / Los Alamos National Laboratory RCRA permit NM 0890010515

Dear Mr. Taylor and Dr. Brown:

This letter is to inform you that the New Mexico Environment Department (NMED) has approved the Class III permit modification to the US Department of Energy/Los Alamos National Laboratory (DOE/LANL) Resource Conservation and Recovery Act (RCRA) Permit No. NM0890100515 proposed in the Requests for Permit Modification: Units Proposed for No Further Action dated March and September 1995 and September 1996. The modification is effective as of this date.

The modification removes ninety-nine (99) Solid Waste Management Units from Tables A, B and C of Permit Module VIII, Special Conditions Pursuant to the 1984 Hazardous and Solid Waste Amendments (HSWA) to RCRA for Los Alamos National Laboratory. Enclosed are the revised Tables A, B and C replacement pages for the tables currently in Module VIII. Please remove and replace the 12-8-98 modified pages in your copy of the Permit. A list of the ER sites removed are listed in Tables A.1, B.1 and C.1.

Received by EH-HPF  
JAN 20 1998  
*OM*

*orig -> Galiz*  
*cy: PMT*  
*Tenn Ldos*  
~~*RECEIVED*~~

C628

Dr. Browne and Mr. Taylor  
December 23, 1998  
Page 2

Three written comments were received by NMED regarding its proposal to approve this permit modification. The comments and responses are enclosed.

Please contact John Kieling of HRMB, at 827-1558 extension 1012, if you have any questions.

Sincerely,



Ed Kelley, Ph. D., Director  
Water and Waste Management Division

enclosures

cc: J. Canepa, LANL EM/ER, MS M992  
J. Davis, NMED SWQB  
R. Dinwiddie, NMED HRMB  
B. Garcia, NMED HRMB  
M. Johansen, DOE LAAO, MS A316  
J. Kieling, NMED HRMB  
H. LeDoux, DOE LAAO, MS A316  
D. McInroy, LANL EM/ER, MS M992  
D. Neleigh, EPA, 6PD-N  
J. Parker, NMED DOE OB  
S. Yanicak, NMED DOE OB, MS J993  
File: HSWA LANL G/P '98  
Track: LANL, 12/23/98, na, DOE/LANL, NMED/WWMD/Kelley, RE, File

Table A

Technical Area 0					
<u>SWMU Number</u>	1-006(c)	3-014(f)	5-004	8-005	
0-001	1-006(d)	3-014(g)	5-005(a)	8-006(a)	
0-003	1-006(h)	3-014(h)	5-005(b)	8-009(a)	
0-011(a)	1-006(n)	3-014(i)	5-006(b)	8-009(d)	
0-011(e)	1-006(o)	3-014(j)	5-006(c)	8-009(e)	
0-011(d)	1-007(a)	3-014(k)	5-006(e)	C-8-010 (12)	
0-011(e)	1-007(b)	3-014(l)	5-006(f) (11)		
0-012	1-007(c)	3-014(m)			
0-016	1-007(d)	3-014(n)	<u>Technical Area 6</u>	<u>Technical Area 9</u>	
0-017	1-007(e)	3-014(o)	6-001(a)	9-001(a)	
0-018(a)	1-007(f)	3-014(p)	6-001(b)	9-001(b)	
0-019	1-007(g) (36)	3-014(q)	6-002	9-001(c)	
0-028(a)		3-014(r)	6-003(a)	9-001(d)	
0-028(b)	<u>Technical Area 2</u>	3-014(s)	6-003(e)	9-002	
0-030(a)	2-005	3-014(t)	6-003(d)	9-003(a)	
0-030(b)	2-006(a)	3-014(u)	6-003(e)	9-003(b)	
0-030(c)	2-006(b)	3-015	6-003(f)	9-003(d)	
0-030(d)	2-007	3-026(d)	6-003(g)	9-003(e)	
0-030(f)	2-008(a)	3-028	6-003(h)	9-003(g)	
0-030(m)	2-008(b)	3-033	6-005	9-003(h)	
0-033	2-009(a)	3-036(a)	6-006	9-003(i)	
0-039 (20)	2-009(b)	3-036(c)	6-007(a)	9-004(a)	
	2-009(c) (9)	3-036(d)	6-007(b)	9-004(b)	
		3-037	6-007(c)	9-004(c)	
<u>Technical Area 1</u>		3-038(a)	6-007(d)	9-004(d)	
1-001(a)	<u>Technical Area 3</u>	3-038(b)	6-007(e)	9-004(e)	
1-001(b)	3-001(k)	3-043(e)	6-007(f)	9-004(f)	
1-001(c)	3-002(c)	3-044(a)	6-007(g) (19)	9-004(g)	
1-001(d)	3-003(a)	3-056(a)		9-004(h)	
1-001(e)	3-003(b)	3-056(c) (47)	<u>Technical Area 7</u>	9-004(i)	
1-001(f)	3-003(c)		7-001(a)	9-004(j)	
1-001(g)	3-009(a)	<u>Technical Area 4</u>	7-001(b)	9-004(k)	
1-001(m)	3-009(c)	4-001	7-001(c)	9-004(l)	
1-001(o)	3-009(d)	4-002	7-001(d) (4)	9-004(m)	
1-001(s)	3-009(g)	4-003(a)		9-004(n)	
1-001(t)	3-010(a)	4-003(b) (4)	<u>Technical Area 8</u>	9-004(o)	
1-001(u)	3-012(b)		8-002	9-005(a)	
1-002	3-013(a)	<u>Technical Area 5</u>	8-003(a)	9-005(d)	
1-003(a)	3-014(a)	5-001(a)	8-004(a)	9-005(g)	
1-003(d)	3-014(b)	5-001(b)	8-004(b)	9-006	
1-003(e)	3-014(c)	5-002	8-004(c)	9-008(b)	
1-006(a)	3-014(d)	5-003	8-004(d)	9-009	
1-006(b)	3-014(e)				

Table A

9-013	11-005(b)	15-004(b)	Technical Area 16	16-010(h)
C-9-001 (35)	11-005(c)	15-004(c)	16-001(m)	16-010(i)
	11-005(a)	15-004(f)	16-001(b)	16-010(j)
Technical Area 10	11-006(b)	15-004(g)	16-001(c)	16-010(k)
10-001(a)	11-006(c)	15-004(i)	16-001(d)	16-010(l)
10-001(b)	11-006(d)	15-006(a)	16-001(e)	16-010(m)
10-001(c)	11-009	15-006(b)	16-003(a)	16-010(n)
10-001(d)	11-011(a)	15-006(c)	16-003(b)	16-013
10-002(a)	11-011(b)	15-006(d)	16-003(c)	16-016(a)
10-002(b)	11-011(c)	15-007(a)	16-003(d)	16-016(b)
10-003(a)	11-011(d) (21)	15-007(b)	16-003(e)	16-016(c)
10-003(b)		15-007(c)	16-003(f)	16-018
10-003(c)		15-007(d)	16-003(g)	16-019
10-003(d)	Technical Area 12	15-008(a)	16-003(h)	16-020
10-003(e)	12-001(a)	15-008(b)	16-003(i)	16-021(a)
10-003(f)	12-001(b)	15-008(c)	16-003(j)	16-021(e)
10-003(g)	12-002 (3)	15-008(d)	16-003(k)	16-024(b)
10-003(h)		15-009(a)	16-003(l)	16-024(c)
10-003(i)	Technical Area 13	15-009(b)	16-003(m)	16-024(d)
10-003(j)	13-001	15-009(c)	16-003(n)	16-024(e)
10-003(k)	13-002	15-009(e)	16-003(o)	16-026(i2)
10-003(l)	13-003(a)	15-009(f)	16-004(a)	16-026(j2)
10-003(m)	13-004 (4)	15-009(g)	16-004(b)	16-026(v)
10-003(n)		15-009(h)	16-004(c)	16-029(a)
10-003(o)	Technical Area 14	15-009(i)	16-004(d)	16-029(b)
10-004(a)	14-001(a)	15-009(j)	16-004(e)	16-029(c)
10-004(b)	14-002(b)	15-009(k)	16-004(f)	16-029(d)
10-005	14-002(c)	15-010(a)	16-005(g)	16-029(e)
10-006	14-002(d)	15-010(b)	16-005(n)	16-029(f)
10-007 (26)	14-007(c)	15-010(c)	16-006(a)	16-029(g)
	14-007(f)	15-011(a)	16-006(c)	16-030(h)
Technical Area 11	14-003	15-011(b)	16-006(d)	16-035
11-001(a)	14-005	15-011(c)	16-006(e)	16-036 (74)
11-001(b)	14-006	15-012(a)	16-007(a)	
11-001(c)	14-007	15-012(b)	16-008(a)	Technical Area 18
11-002	14-009	15-014(a)	16-009(a)	18-001(a)
11-004(a)	14-010 (12)	15-014(b)	16-010(a)	18-001(b)
11-004(b)		15-014(i)	16-010(b)	18-001(c)
11-004(c)	Technical Area 15	15-014(j)	16-010(c)	18-002(a)
11-004(d)	15-002	15-014(k)	16-010(d)	18-002(b)
11-004(e)	15-003	15-014(l) (44)	16-010(e)	18-003(a)
11-005(a)	15-004(a)		16-010(f)	18-003(b)

Table A

18-003(e)	21-01J(b)	21-022(i)	<u>Technical Area 26</u>	33-005(a)
18-003(d)	21-010(c)	21-022(j)	26-001	33-005(b)
18-003(e)	21-010(d)	21-023(a)	26-002(a)	33-005(c)
18-003(f)	21-010(e)	21-023(b)	26-002(b)	33-006(a)
18-003(g)	21-010(f)	21-023(c)	26-003 (4)	33-006(b)
18-003(h)	21-010(g)	21-023(d)		33-007(a)
18-004(a)	21-010(h)	21-024(a)	<u>Technical Area 27</u>	33-007(b)
18-004(b)	21-011(a)	21-024(b)	27-001	33-007(c)
18-005(a)	21-011(b)	21-024(c)	27-002	33-008(a)
18-007	21-011(c)	21-024(d)	27-003 (3)	33-008(b)
18-012(a)	21-011(d)	21-024(e)		33-009
18-012(b) (19)	21-011(e)	21-024(f)	<u>Technical Area 31</u>	33-010(a)
	21-011(f)	21-024(g)	31-001 (1)	33-010(b)
	21-011(g)	21-024(h)		33-010(c)
<u>Technical Area 19</u>	21-011(h)	21-024(i)	<u>Technical Area 32</u>	33-010(d)
19-001	21-011(i)	21-024(j)	32-001	33-010(f)
19-002	21-011(j)	21-024(k)	32-002(a)	33-010(g)
19-003 (3)	21-012(b)	21-024(l)	32-002(b) (3)	33-010(h)
	21-013(a)	21-024(m)		33-011(a)
<u>Technical Area 20</u>	21-013(b)	21-024(o)	<u>Technical Area 33</u>	33-011(c)
20-001(a)	21-013(c)	21-026(a)	33-001(a)	33-011(d)
20-001(b)	21-013(d)	21-026(b)	33-001(b)	33-011(e)
20-001(c)	21-013(e)	21-027(a)	33-001(c)	33-017(a)
20-002(a)	21-014	21-027(c)	33-001(d)	33-013
20-002(b)	21-015	21-027(d)	33-001(e)	33-014
20-002(c)	21-016(a)	21-029 (80)	33-002(a)	33-015
20-002(d)	21-016(b)		33-002(b)	33-016
20-003(a)	21-016(c)	<u>Technical Area 22</u>	33-002(c)	33-017 (50)
20-005 (9)	21-017(a)	22-010(a)	33-002(d)	
	21-017(b)	22-010(b)	33-002(e)	
<u>Technical Area 21</u>	21-017(c)	22-011	33-003(a)	<u>Technical Area 35</u>
21-002(a)	21-018(a)	22-012	33-003(b)	35-002
21-003	21-018(b)	22-014(a)	33-004(a)	35-003(a)
21-004(b)	21-021	22-014(b)	33-004(b)	35-003(b)
21-004(c)	21-022(a)	22-015(a)	33-004(c)	35-003(c)
21-005	21-022(b)	22-015(b)	33-004(d)	35-003(d)
21-006(a)	21-022(c)	22-015(c)	33-004(e)	35-003(e)
21-006(b)	21-022(d)	22-015(d)	33-004(f)	35-003(f)
21-006(c)	21-022(e)	22-015(e)	33-004(g)	35-003(g)
21-006(d)	21-022(f)	22-016 (12)	33-004(h)	35-003(h)
21-006(e)	21-022(g)		33-004(i)	35-003(i)
21-007	21-022(h)		33-004(j)	35-003(j)
21-010(a)			33-004(k)	35-003(k)

Environmental Sciences Division

Table A

	Technical Area 36	Technical Area 42	46-004(f)	Technical Area 49
35-003(l)	36-001	42-001(a)	46-004(g)	49-001(a)
35-003(m)	36-002	42-001(b)	46-004(h)	49-001(b)
35-003(n)	36-003(a)	42-001(c)	46-004(i)	49-001(c)
35-003(o)	36-003(b)	42-002(b)	46-004(j)	49-001(d)
35-003(p)	36-004(d)	42-003 (5)	46-004(k)	49-001(e)
35-003(q)	36-005		46-004(l)	49-001(f)
35-004(a)	36-006	Technical Area 43	46-004(m)	49-001(g)
35-004(b)	C-36-003 (8)	43-001(a)	46-004(n)	49-003
35-004(c)		43-002 (2)	46-005	49-004
35-004(d)	Technical Area 39		46-006(a)	49-005(a)
35-004(e)	39-001(a)	Technical Area 45	46-006(b)	49-006 (11)
35-004(f)	39-001(b)	45-001	46-006(c)	
35-004(g)	39-002(a)	45-002	46-006(d)	Technical Area 50
35-004(h)	39-004(a)	45-003	46-006(e)	50-001(a)
35-006	39-004(b)	45-003 (4)	46-006(f)	50-002(a)
35-008	39-004(c)		46-007	50-002(b)
35-009(a)	39-004(d)	Technical Area 46	46-008(a)	50-002(c)
35-009(b)	39-004(e)	46-002	46-008(b)	50-004(a)
35-009(c)	39-005	46-003(a)	46-008(d)	50-004(b)
35-009(d)	39-006(a)	46-003(b)	46-008(e)	50-004(c)
35-009(e)	39-007(a)	46-003(c)	46-008(f)	50-006(a)
35-010(a)	39-008 (12)	46-003(d)	46-008(g)	50-006(c)
35-010(b)		46-003(e)	46-009(a)	50-006(d)
35-010(c)	Technical Area 40	46-003(f)	46-009(b)	50-009
35-010(d)	40-001(b)	46-003(g)	46-010(d) (10)	50-011(a) (12)
35-011(a)	40-001(c)	46-003(h)		
35-011(b)	40-003(a)	46-004(a)	Technical Area 48	Technical Area 52
35-013(a)	40-004	46-004(b)	48-002(a)	52-001(d)
35-013(b)	40-005	46-004(c)	48-002(b)	52-002(a) (2)
35-013(c)	40-006(a)	46-004(d)	48-003	
35-013(d)	40-006(b)	46-004(e)	48-004(a)	Technical Area 53
35-014(a)	40-006(c)	46-004(f)	48-004(b)	53-001(a)
35-014(b)	40-009	46-004(g)	48-004(c)	53-001(b)
35-014(c)	40-010 (10)	46-004(h)	48-005	53-002(a)
35-014(d)		46-004(a2)	48-007(a)	53-002(b)
35-014(e)	Technical Area 41	46-004(b2)	48-007(b)	53-005
35-014(f)	41-001	46-004(c2)	48-007(c)	53-006(b)
35-015(a)	41-002(a)	46-004(d2)	48-007(d)	53-006(c)
35-015(b)	41-002(b)	46-004(m)	48-007(f)	53-006(d)
35-016(a)	41-002(c) (4)	46-004(n)	48-010 (13)	53-006(e)
35-016(b)		46-004(o)		53-006(f)
35-016(c)				
35-016(d)				
35-016(e)				
35-016(f)				
35-016(g)				
35-016(h)				
35-016(i)				
35-016(j)				
35-016(k)				
35-016(l)				
35-016(m)				
35-016(n)				
35-016(o)				
35-016(p)				
35-016(q) (53)				

Table A

53-007(a) (11)	54-014(c)	Technical Area 59	61-006	73-001(b)
	54-014(d)	59-001 (1)	61-007 (5)	73-001(c)
Technical Area 54	54-015(h)			73-001(d)
54-001(a)	54-015(k)	Technical Area 60	Technical Area 63	73-002
54-004 (excluding Shaft No. 9)	54-017	60-002	63-001(a)	73-004(a)
54-005	54-018	60-005(a)	63-001(b) (2)	73-004(b)
54-006	54-019	60-006(a)		73-004(c)
54-007(a)	54-020 (18)	60-007(a)	Technical Area 69	73-004(d)
54-007(b)		60-007(b) (5)	69-001 (1)	73-005
54-007(c)	Technical Area 55			73-006 (11)
54-012(b)	55-008	Technical Area 61		
54-013(b)	55-009 (2)	61-002	Technical Area 73	Total SWMUs in Table A = 801
54-014(b)		61-004(a)	73-001(a)	
		56.00		

Table A.1  
 No Further Action

SWMUs removed from Table A through a Class III Permit Modification and date of removal

0-005 12-23-98	3-035(b) 12-23-98	16-005(i) 12-23-98	16-012(o) 12-23-98	39-003 12-23-98
1-001(h) 12-23-98	3-039(a) 12-23-98	16-005(o) 12-23-98	16-012(p) 12-23-98	39-006(b) 12-23-98
1-001(i) 12-23-98	7-003(c) 12-23-98	16-006(b) 12-23-98	16-012(q) 12-23-98	40-001(a) 12-23-98
1-001(j) 12-23-98	7-003(d) 12-23-98	16-006(f) 12-23-98	16-012(r) 12-23-98	46-008(c) 12-23-98
1-001(k) 12-23-98	8-003(b) 12-23-98	16-010(g) 12-23-98	16-012(s) 12-23-98	52-001(a) 12-23-98
1-001(l) 12-23-98	8-003(c) 12-23-98	16-012(e) 12-23-98	16-012(t) 12-23-98	52-001(b) 12-23-98
1-001(n) 12-23-98	8-006(b) 12-23-98	16-012(b) 12-23-98	16-012(u) 12-23-98	52-001(c) 12-23-98
3-001(a) 12-23-98	8-007 12-23-98	16-012(c) 12-23-98	16-012(v) 12-23-98	52-002(b) 12-23-98
3-001(b) 12-23-98	9-003(c) 12-23-98	16-012(d) 12-23-98	16-012(w) 12-23-98	52-002(c) 12-23-98
3-001(c) 12-23-98	9-003(f) 12-23-98	16-012(e) 12-23-98	16-012(x) 12-23-98	52-002(d) 12-23-98
3-002(b) 12-23-98	9-005(b) 12-23-98	16-012(f) 12-23-98	16-012(y) 12-23-98	52-002(e) 12-8-97
3-009(b) 12-23-98	9-005(c) 12-23-98	16-012(g) 12-23-98	16-012(z) 12-23-98	52-002(f) 12-23-98
3-009(c) 12-23-98	9-005(e) 12-23-98	16-012(h) 12-23-98	21-012(a) 12-23-98	53-007(b) 12-23-98
3-009(f) 12-23-98	9-005(f) 12-23-98	16-012(i) 12-23-98	21-024(m) 12-23-98	54-001(c) 12-23-98
3-009(h) 12-23-98	9-005(h) 12-23-98	16-012(j) 12-23-98	21-027(b) 12-23-98	54-013(a) 12-23-98
3-012(a) 12-23-98	9-007 12-23-98	16-012(k) 12-23-98	33-004(e) 12-23-98	
3-018 12-23-98	11-007 12-23-98	16-012(l) 12-23-98	33-004(f) 12-23-98	
3-020(a) 12-23-98	14-004(b) 12-23-98	16-012(m) 12-23-98	35-003(i) 12-23-98	
3-033(a) 12-23-98	15-014(m) 12-23-98	16-012(n) 12-23-98	36-003(c) 12-23-98	

SWMUs removed from Table A = 98

Table B - Priority SWMUs\*

<u>SWMU Number</u>	11-004(e)	16-007	21-011(h)	36-003(a)
1-001(a)	11-005(a)	16-008(b)	21-011(i)	36-003(b)
1-001(b)	11-005(b)	16-016	21-014	39-001(a)
1-001(c)	11-006(a)	16-018	21-015	39-001(b)
1-001(d)	13-004	16-019	21-016(a)	41-001
1-001(e)	15-002	16-020	21-017(a)	46-002
1-001(f)	15-006(a)	16-021(a)	21-017(b)	46-006(a)
1-001(g)	15-006(b)	18-001(a)	21-017(c)	46-006(b)
1-001(m)	15-006(c)	18-003(a)	21-018(a)	46-006(c)
1-002	15-006(d)	18-003(b)	21-018(b)	46-006(d)
1-002(a)	15-007(a)	18-003(c)	22-015(c)	46-007
2-005	15-007(b)	18-003(d)	23-002(a)	49-001(a)
2-005(a)	15-007(c)	18-003(e)	23-002(b)	50-006(a)
3-010(a)	15-007(d)	18-003(f)	23-002(c)	50-006(c)
3-012(b)	15-008(a)	18-003(g)	23-017	50-006(d)
3-012(a)	15-008(b)	18-003(h)	23-003(a)	50-009
3-015	15-008(c)	21-006(a)	23-003(b)	54-004 (except Shaft No. 9)
3-029(a)	15-008(d)	21-006(b)	23-003(c)	
3-005(a)	15-009(a)	21-006(c)	23-003(d)	54-005
6-007(a)	15-009(b)	21-006(d)	23-003(e)	54-015(h)
8-003(a)	15-012(a)	21-006(e)	23-003(f)	60-005(a)
9-005(a)	15-012(b)	21-010(a)	23-003(g)	73-001(a)
9-005(b)	15-012(c)	21-010(b)	23-003(h)	
9-009	15-012(d)	21-010(c)	23-003(i)	Total SWMUs In Table B = 164
9-013	15-012(e)	21-010(d)	23-003(j)	
10-003(a)	15-012(f)	21-010(e)	23-003(k)	* As RFI work progresses, EPA main identify more SWMUs to be added to the list to be addressed in the installation workplans.
10-003(b)	15-012(g)	21-010(f)	23-003(l)	
10-003(c)	16-001(b)	21-010(g)	23-003(m)	
10-003(d)	16-001(c)	21-010(h)	23-003(n)	
10-003(e)	16-001(d)	21-011(a)	23-003(o)	
10-003(f)	16-001(e)	21-011(b)	23-003(p)	
10-006	16-005(n)	21-011(c)	23-006	
11-004(a)	16-006(a)	21-011(d)	23-010(a)	
11-004(b)	16-006(b)	21-011(e)	23-010(b)	
11-004(c)	16-006(d)	21-011(f)	23-010(c)	
11-004(d)	16-006(e)	21-011(g)	23-010(d)	

Table B.1  
 No Further Action

SWMUs removed from Table B through a Class III Permit Modification and date of removal

0-005	12-23-98	1-001(k)	12-23-98	3-020(a)	12-23-98	16-005(o)	12-23-98	36-003(c)	12-23-98
1-001(h)	12-23-98	1-001(l)	12-23-98	8-003(b)	12-23-98	16-006(f)	12-23-98	SWMUs removed from Table B = 17	
1-001(i)	12-23-98	1-001(n)	12-23-98	8-003(c)	12-23-98	21-012(a)	12-23-98		
1-001(j)	12-23-98	3-012(a)	12-23-98	8-007	12-23-98	35-003(i)	12-23-98		

Table C

RFI Work Plan due  
 July 7, 1994:  
 Technical Area 16

16-005(a)  
 16-005(b)  
 16-005(e)  
 16-005(d)  
 16-005(e)  
 16-005(h)  
 16-005(j)  
 16-005(k)  
 16-005(l)  
 16-005(m)  
 16-005(g)  
 16-005(h)  
 16-011(a)  
 16-011(b)  
 16-011  
 16-021(e)  
 16-021(a)  
 16-021(b)  
 16-023(b2)  
 16-025(c2)  
 16-025(d)  
 16-025(e)  
 16-025(f)  
 16-025(g)  
 16-025(h)  
 16-025(i)  
 16-025(j)  
 16-025(k)  
 16-025(l)  
 16-025(m)  
 16-025(n)  
 16-025(o)  
 16-025(p)  
 16-025(q)  
 16-025(r)  
 16-025(s)  
 16-025(t)  
 16-025(u)  
 16-025(v)  
 16-025(w)

16-025(x)  
 16-025(y)  
 16-025(z)  
 16-026(m)  
 16-026(n)  
 16-026(o)  
 16-026(p)  
 16-026(q)  
 16-026(r)  
 16-026(w)  
 16-026(s)  
 16-029(a2)  
 16-029(b2)  
 16-029(c2)  
 16-029(d2)  
 16-029(e2)  
 16-029(f2)  
 16-029(g2)  
 16-029(h2)  
 16-029(k)  
 16-029(l)  
 16-029(m)  
 16-029(n)  
 16-029(o)  
 16-029(p)  
 16-029(q)  
 16-029(r)  
 16-029(s)  
 16-029(t)  
 16-029(u)  
 16-029(v)  
 16-029(w)  
 16-029(x)  
 16-029(y)  
 16-029(z)  
 16-031(c)  
 16-031(d)  
 16-032(a)  
 16-032(c)  
 16-034(a)  
 16-034(b)  
 16-034(c)

16-034(d)  
 16-034(e)  
 16-034(f)  
 16-034(l)  
 16-034(m)  
 16-034(n)  
 16-034(o)  
 16-034(p)  
 C-16-025  
 C-16-026  
 \* Total  
 SWMUs = 92

RFI Work Plan due  
 July 7, 1995:  
 Technical Area 16

16-016(d)  
 16-016(e)  
 16-016(g)  
 16-025(a2)  
 16-025(d2)  
 16-025(e2)  
 16-025(f2)  
 16-025(h2)  
 16-026(a)  
 16-026(a2)  
 16-026(b2)  
 16-026(c2)  
 16-026(d2)  
 16-026(f)  
 16-026(f2)  
 16-026(g)  
 16-026(g2)  
 16-026(h)  
 16-026(i)  
 16-026(j)  
 16-026(k)  
 16-026(k2)  
 16-026(l)  
 16-026(r)  
 16-026(s)  
 16-026(u)  
 16-026(x)

16-026(y)  
 16-026(z)  
 16-028(b)  
 16-028(c)  
 16-028(d)  
 16-028(e)  
 16-029(h)  
 16-029(i)  
 16-029(j)  
 16-030(a)  
 16-030(b)  
 16-030(c)  
 16-030(e)  
 16-030(f)  
 16-031(a)  
 16-031(b)  
 16-031(c)  
 16-031(f)  
 16-031(h)  
 16-034(h)  
 16-034(i)  
 16-034(j)  
 16-034(k)  
 Total SWMUs = 51

RFI Work Plan due  
 May 21, 1995:  
 Operable Unit 1114

3-002(a)  
 3-002(d)  
 3-009(c)  
 3-009(f)  
 3-009(j)  
 3-011  
 3-019  
 3-021  
 3-025(a)  
 3-025(b)  
 3-026(b)  
 3-026(c)  
 3-029  
 3-031  
 3-032  
 3-034(a)

3-034(b)  
 3-043(c)  
 3-045(a)  
 3-045(b)  
 3-045(c)  
 3-045(e)  
 3-045(f)  
 3-045(g)  
 3-045(h)  
 3-045(i)  
 3-046  
 3-049(a)  
 3-049(b)  
 3-049(c)  
 3-049(d)  
 3-049(e)  
 3-050(a)  
 3-050(d)  
 3-050(e)  
 3-050(f)  
 3-050(g)  
 3-052(a)  
 3-052(c)  
 3-052(e)  
 3-052(f)  
 3-054(a)  
 3-054(b)  
 3-054(c)  
 3-054(d)  
 3-054(e)  
 3-055(a)  
 3-055(c)  
 3-055(d)  
 3-056(d)  
 3-056(f)  
 3-056(m)  
 3-056(n)  
 3-059  
 Total SWMUs = 54  
 \* 20 additional  
 SWMUs were added  
 after workplan  
 review

**Availability of Additional Information:** A Statement of Basis has been prepared to provide additional information on site history, evaluation of relevant investigations, and basis for the decision to approve NFA status. The administrative record for this proposed action consists of this fact sheet, NMED's statement of basis, the legal notice, the proposed revised Tables A, B, and C, and a summary of public involvement activities. The administrative record may be reviewed from October 21 through December 4, 1998 at:

New Mexico Environment Department  
Hazardous and Radioactive Materials Bureau  
P.O. Box 26110  
2044-A Galisteo Street  
Santa Fe, New Mexico 87502  
(505) 827-1561  
Attn: Mr. John Kieling

The legal notice, fact sheet, NMED's Statement of Basis, and modified permit may also be reviewed at:

Los Alamos National Laboratory Community Relations Reading Room  
1350 Central Avenue, Suite 101  
Los Alamos, New Mexico 87544

To obtain a copy of the administrative record or any part thereof, please contact Mr. John Kieling at the New Mexico Environment Department at the above address. Any person who wishes to comment on this permit modification or to request a public hearing should submit written comments/requests, along with the commentator's/requester's name and address, to John Kieling at the above address. Requests for hearing should include a statement of the nature of the issues proposed. Only comments/requests received by December 4, 1998 will be raised. NMED will provide a 30-day notice of the public hearing, if scheduled.

**Final Decision:**

All written comments and issues raised at a Public Hearing, if held, will become part of the administrative record and will be considered in formulating the final decision. NMED may approve, or modify and approve, the requested permit modification based on the comments received. NMED will notify DOE/LANL and each person who submitted a written comment during the public comment period or testimony at a Public hearing of the final decision, including any approved change to the proposed modification, and a detailed statement of reasons for any such change. The final decision will be made according to applicable State and Federal laws.

ALM 1027-8 Santa Fe, NM 87501  
Box 210-X  
1876015

Tritium (radioactive Hydrogen) was found in the water at the San Ildefonso Pueblo a couple of years ago. A report from some time ago was never made public because it showed Tritium going mostly to the brain. Uranium has been found in the water at Nambé and Pojoaque and, as most know, Uranium was named after Uranus. It appears to me that the Government is trying to solve the "Indian problem" of 200 years with heavy metals other than lead. With 2 laboratories in Japan, I'm sure lab management always wanted one closer to their "glowing" bomb factory, like in the Valley. There they could convert "We the People" into "We the Glowing Guinea Pigs." At a Brain Tumor meeting in Los Alamos about 5 years ago, an Albuquerque Journal Reporter asked Lab Managers if the CCNS statement was correct? CCNS claimed that LANL (Los Alamos Nuclear Liars) released 3,200,000 CURIES into the Atmosphere between 1982 and 1992. A lab Audio Technician at the meeting was sure it was a misprint. The red faces of the lab managers told the true story. YES, they did release 3,200,000 CURIES into the Atmosphere, which is technically known as: NUCLEAR FLATULENCE!

The Brain Tumor Committee back then consisted of 19 members. Ten were lab employees, and 5 were lab managers making 45K to 110K a year (at that time). The 9 other "civilians" included wives of lab employees, a local Doctor and one Anti-Nuke. The local doctor was quoted as saying: he never expected to see that many Brain Tumors in his whole career. Two weeks later, he did a 180° and said that many Brain Tumors was normal. It's my guess that DOE and LANL (Los Alamos Nuclear Leukenogenic) sat the good doctor down and explained how one goes about having a successful career in Los Alamos. The doctor has since moved to the north woods and hopefully will never be heard from again.

A similar situation has arisen involving DOE and the Civilian Advisory Board (CAB). The first hand-picked CAB meeting a couple of years ago was made up of people who knew NOTHING. Half of the group raised their hands when I asked how many thought they could influence DOE or LANL (Los Alamos Nuclear Looney-Tunes). DOE is again trying to stack the board with people they can control. Two or three years ago, DOE and LANL (Los Alamos Nuclear Lavatory) again went through an exercise in futility by saying NOW they are going to be straight arrows (like a boomerang). I for one am 99% sure that DOE and LANL (Los Alamos Never Listens) will NEVER come clean, without pressure. I believe an Environmental Militia (with guns) will be required to get the "Nuclear Nerds" to pay attention that "We the Guinea Pigs" are tired of "Glowing Reports" on how clean the lab is.

For those who don't know, Safety was supposed to become #1 Priority on June 17, 1989. Not '79, not '69, not '59, not '49. The last time the "Bomb" was safe was '39, when it was just a theory. I've often wondered what priority Safety was before June 17, 1989, or even if it was?

The safety problem at the CMR Building is nothing new. LANL (Los Alamos Nuclear Latrine) got off on the wrong foot during WWII and has NEVER addressed safety, except with rhetoric. Some well meaning lab people tried to convince me that all is well behind the Los Alamos Inn. It was a joke among those that knew better back in the 70's, that the deeper they dug, the hotter it got. According to old blueprints, there was a Plutonium Processing Plant where the Los Alamos Inn is today. This plant had 2 pipes running over the side and into the Canyon for years. Today it's supposed to be clean! BARF! LANL (Los Alamos Nukes Loved-ones) has spent most of its cleanup money clearing up on paper. Any actual cleanup is done by outside firms. LANL (Los Alamos Nuclear Lavatory) has NO idea how to clean up. They have always substituted COVER-UP! Rumor says the lab will be covered up with cement around 2016 and closed. If true, it'll be the only good cover-up by DOE and the lab in more than 1/2 century.

An article appeared in the August 4th issue of Time Magazine that would make even hardened critics like myself BARF! It appears to have been written by the Lab's P.R. Dept. (at gunpoint) or Salt Lake City's P.R. Dept. Many of the CLER group that I talked to at meetings in Pojoaque would not agree with the goody-goody image projected by the article. Many were unemployed because of what they consider was a religious issue. I see it as an economic issue. I would suggest that if some religious sect or cult has destroyed your life beyond repair, then you have a moral obligation to see that it doesn't happen to someone else. Being some will be "escaping" soon, don't put off 'till tomorrow what should be done NOW! DOE wants to make sure that CAB is short for CABRONES!



GARY E. JOHNSON  
GOVERNOR

State of New Mexico  
ENVIRONMENT DEPARTMENT  
Hazardous & Radioactive Materials Bureau  
2044 Galisteo Street  
P.O. Box 26110  
Santa Fe, New Mexico 87502  
(505) 827-1557  
Fax (505) 827-1544



PETER MAGGIORE  
SECRETARY

11-16-98 09:44 AM

**CERTIFIED LETTER  
RETURN RECEIPT REQUESTED**

November 16, 1998

Mr. Al Shapolia  
Rt. 11 Box 210-x, #102  
Santa Fe, New Mexico 87501

**RE: Proposed Class III Permit Modification**

Dear Mr. Shapolia:

The New Mexico Environment Department (NMED) Hazardous and Radioactive Materials Bureau (HRMB) is in receipt of your letter regarding the proposed Class III Permit Modification of 99 solid waste management units at Los Alamos National Laboratory. Your letter requested information regarding the plutonium processing plant (in the area of Los Alamos Inn) and what technical area (TA) it is located within.

The plutonium processing plant was located adjacent to Ashley Pond within TA-0 along Trinity Drive at Los Alamos town site. The plant was demolished and used for fill within TA-1, south of TA-0, beneath the current location of Los Alamos Inn. Of the 99 solid waste management units proposed for no further action through a Class III Permit Modification none of these units are located at or near the Los Alamos Inn or the location of the plutonium processing plant. Undergoing investigations by Los Alamos National Laboratory near Los Alamos Inn are currently underway but have not been approved for no further action by NMED.

If you have any additional questions or concerns regarding this matter please call Mr. John Kieling of my staff at (505) 827-1558 x1012.

Sincerely

Benito J. Garcia, Chief  
Hazardous and Radioactive Materials Bureau

CHARLES R. WILSON, Ph.D  
Water Resources and Environmental Consultant

27 November 1998

New Mexico Environment Department  
Hazardous & Radioactive Materials Bureau  
2044 Galisteo Street  
Santa Fe, New Mexico 87502



Attn: John Kieling

Re: PROPOSED CLASS III PERMIT MODIFICATION FOR  
LOS ALAMOS NATIONAL LABORATORY

Dear Mr. Kieling:

Thank you for your notification of 21 October 1998 regarding the subject permit modifications. I support your decision to remove the 99 SWMUs from the HSWA Module of the Laboratory's permit. Deleting SWMUs for the reasons you stated (they do not exist, they are duplicates of other SWMUs, they were never used for management or RCRA constituents, and so on) is entirely appropriate. I am personally aware of the problems that Laboratory personnel have encountered in tracking down many of the sites in the original SWMU list. I have concluded that the original list was based on insufficient information and contained many sites that should not have been included.

Sincerely,

Charles R. Wilson, P.E.



GARY E. JOHNSON  
GOVERNOR

State of New Mexico  
ENVIRONMENT DEPARTMENT  
Surface Water Quality Bureau  
1190 St. Francis Dr., P.O. Box 26110  
Santa Fe, New Mexico 87502  
Phone (505) 827-0187  
Fax (505) 827-0160



Registered Mail-Return Receipt Requested

Z 128 816 002

November 25, 1998

Mr. John Kieling  
Hazardous and Radioactive Materials Bureau  
New Mexico Environment Department  
P.O. Box 26110  
2044-A Galisteo St.  
Santa Fe, New Mexico 87502

RE: Comments On Notice Of Intent To Approve A Modification To RCRA Permit No. NM0890010515 US Department of Energy/Los Alamos National Laboratory

Dear Mr. Kieling:

The New Mexico Environment Department-Surface Water Quality Bureau (NMED-SWQB) has reviewed the documentation regarding the notice of intent to approve a Class III permit modification to remove ninety-nine (99) Solid Waste Management Units (SWMUs) from the DOE/LANL RCRA permit. We appreciate this opportunity to review and make comments/recommendations.

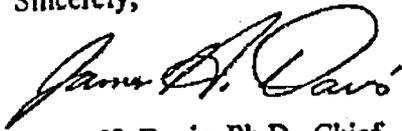
SWQB, in most cases, concurred with the Hazardous and Radioactive Materials Bureau (HRMB) regarding the SWMUs proposed for removal from the DOE/LANL RCRA permit. However, in some cases SWQB will require more information concerning certain SWMUs before concurrence can be made. Comments/recommendations are submitted as an attachment to this letter. If you have any questions regarding the comments/recommendations made, please feel

Mr. Kieling  
NFA Comments  
November 25, 1998  
Page 2

free to call Ms. Barbara Hoditschek of my staff at 827-0596.

Thank you again for your cooperation and the opportunity to comment.

Sincerely,



James H. Davis, Ph.D., Chief  
Surface Water Quality Bureau

Enclosure

cc:

E. Kelley, Ph.D., Dir., NMED-WWMD  
B. Garcia, Chief, NMED-HRMB  
M. Leavitt, Chief, NMED-GWQB  
J. Parker, Chief, NMED-DOE/OB  
T. Taylor, DOE LAAO, MS A316  
D. Neliagh, EPA, 6PD-N  
File:LANL:NFA:99:SWQB

## ENCLOSURE

### Surface Water Quality Bureau (SWQB) Comments on Notice of Intent To Approve A Modification To The DOE/LANL RCRA Permit No. NM890010515

The SWQB has reviewed the information provided in the Notice of Intent for ninety-nine (99) SWMUs located at LANL and offers the following comments:

SWQB typically requires information regarding assessment of erosion potential (for LANL, the AP4.5) be provided for evaluation of all SWMUs considered for NFA. This information is a fundamental part of SWQB's decision making process regarding surface water concerns at SWMUs. Of the 99 SWMUs proposed for NFA, 20 had AP 4.5 scores. The 79 SWMUs without scores were reviewed to determine if an AP 4.5 would be required. All 99 SWMUs were evaluated with regard to potential surface water concern.

Review of the information provided in the NFA decision document indicate that some of the 79 SWMUs would not require an erosion potential evaluation. The following SWMUs will not require a AP 4.5 for the following reasons:

- 1) the SWMU did not exist or was not found: 3-009(b,c), 21-012(a), 40-001(a), 46-008(c), 52-002 (c,d), and 54-013(a);
- 2) the SWMU is a typographical error: 7-003(c,d);
- 3) the SWMU is a duplicate of another SWMU: 3-009(h)=60-002, 8-006(b)=8-006(a), 16-005(i)=13-003(a), 16-006(i)=16-006(f), 16-032(d)=16-029(f2), and 16-017=16-034(g);
- 4) the SWMU will be investigated as part of another SWMU: 1-001(i,k) as 1-007(h), 1-001(n) as 1-007(d), 16-026(i2) as 16-006(a), and 16-012(k,r and s) as 16-029 (c,f,c);

NOTE: SWQB recommends a AP 4.5 evaluation for erosion potential be completed for the following SWMUs when they are investigated:

1-007(h), 1-007(d), 60-002, 8-006(a), 13-003(a), 16-006(f), 16-029(c,f,c), 16-006(a), and 16-029(f2).

The following SWMUs are septic systems, and will not require an AP 4.5 evaluation for erosion potential, unless the leachfields associated with these SWMUs "daylite" to the environment. If the SWMU has a leachfield which daylites and is identified as a separate SWMU, the AP 4.5 can be done when that SWMU is investigated, otherwise, the AP 4.5 must be done before SWQB can considered for NFA approval by the SWQB:

**SWQB Comments : 99 NFA Sites**  
**November 25, 1998**  
**Page 2**

1-001(h,l), 8-003(b,c), 9-003(c,f), 9-005(b,c,e,f,h), 9-007, 16-005(o), 16-006 (b), 3-018, 33-004(e,f), 36-003(c), 39-006(b), 52-002 (f), and 1-001(j).

The following SWMUs have AP 4.5 scores indicating the erosion potential scores are low. SWQB concurs on approving these site for removal from the DOE/LANL RCRA permit because the current information indicates they do not pose a substantial surface water threat:

3-020(a), 14-004(b), 16-012(a-h), 16-025(c), 16-026(i2), 16-031(g), 16-034(g), 21-024(m), 16-006(f), 39-003 and 52-002(b).

The SWQB has individual recommendation/comments on the following SWMUS:

**0-005 Landfill**

Because this is a landfill and no verification sampling has been done at the site, SWQB is concerned that constituents other than rad may have been disposed at this site. SWQB would recommend a AP 4.5 be conducted at this site before making a final decision on eligibility for NFA.

**3-009(f) Surface Disposal**

The description of the site (" a few concrete pieces visible along the bank") suggests that some of the disposal may be in the watercourse and thus a potential violation of section 2201 of the WQCC regulations. An AP 4.5 should be conducted at this SWMU.

**3-012(a)**

This site has an erosion potential score of 43.3. Part of the reason for the high score is a result of the site having a 30% slope and visible evidence of runoff. The runoff is to a natural channel which at the time of the assessment did not display signs of erosion. The channel was also well defined and vegetated so that an immediate concern for sediment transport was minimal. Natural drainage patterns are not directing storm water onto the SWMU. However, NPDES outfall (EPA 03A022) is located above the SWMU and acts as a run-on source to the site by discharging cooling tower blowdown water from TA-3-2238. NPDES records indicate that a maximum discharge of 32,400 gallons per year will flow from this outfall. In addition, approximately 600 gallons per year of potable water for fire protection will be discharged through the outfall. Based upon this information and the fact that the area below the outfall is rather stable, and that HRMB has determined no hazardous waste has been managed at the site, SWQB concurs with the determination of NFA. However, if future data indicate the site has become a conduit for

transport of hazardous materials, SWQB requests that HRMB notify them in order that the appropriate actions can be taken to correct the situation.

#### **11-007 Surface Disposal**

This site does not have an erosion assessment score. The information provided in the NFA proposal indicates that the surface disposal area is located at the head of a small drainage and that it contained some road-building refuse. It is not clear whether the building refuse was located in the watercourse. SWQB recommends that the site have an AP 4.5 assessment and review to determine if there is a violation of Section 2201 (refuse in a watercourse) of the Water Quality Control Commission (WQCC) Regulations.

#### **16-005(f) Decommissioned Septic System**

This SWMU consists of a septic tank, drain line, and outfall located NE of TA-16-260. Process knowledge indicates that the septic tank was probably only used for sanitary waste, however, this was not verified (no soil sampling, or surface water/sediment samples have been taken). Erosion assessment of this site provided a high score (AP 4.5 score is 84.3). This score reflects the significant amount of gully erosion at the site observed along the sides of the outfall drainage channel which dissects an adjacent SWMU (16-019- MDA-R). MDA-R is scheduled for Phase 1 sampling for FY 99. The Surface Water Assessment Team (SWAT) reviewed the AP 4.5 assessment and recommended that the visible refuse observed at the site and in the watercourse during the assessment be removed. In addition, SWAT recommended BMPs (riprap, geotextile along banks and/or a few dissipation devices) be installed to address the erosion in the outfall drainage channel. SWQB concurs with the removal of the septic tank and leachfield from the permit, however, the Bureau remains concerned about the significant erosion in the outfall drain channel which runs through MDA-R. SWQB requests that the BMPs recommended by SWAT be installed and maintained in order to prevent further erosion and the migration of contaminated sediments from MDA-R to the watercourse. In addition, surface water monitoring should be done below the site to verify the effectiveness of the BMPs. The AP 4.5 also indicated refuse present in the watercourse. Failure to remove this refuse would constitute disposal of refuse which is a violation of Section 2201 of the Water Quality Control Commission (WQCC) Regulations. Therefore, the refuse should be removed before the SWMU is removed from the RCRA permit. In addition, the Phase 1 sampling scheduled at MDA-R should not be postponed.

#### **16-032(e) Decommissioned HE Sump**

Although this SWMU has not been assessed for erosion potential, SWQB concurs with HRMB concerning removal of this SWMU from the RCRA permit. The site had been misidentified as a decommissioned HE sump and actually was a water pump pit. Therefore, it does not seem to pose a threat to surface water.

**35-003(i) Surge Tank at Wastewater Treatment Plant (TA-35)**

SWQB concurs with HRMB although this site was not evaluated for erosion potential. This decision is based on the NFA information HRMB evaluated which indicates that the tanks were never associated with the wastewater treatment plant and were used only to hold helium and nitrogen gases.

**52-001(a,b,c) UHTREX Equipment**

SWQB requests an AP 4.5 erosion potential assessment be conducted at this SWMU. Although the site was cleaned up to DOE guidelines for radioactivity, SWQB requires verification that the radioactivity remaining in the soil has no potential to enter the watercourse as refuse.

**54-001(c) Storage Area Tank**

SWQB concurs with HRMB's assessment that this SWMU can be removed from the RCRA permit based on information that the tank proposed for the storage of waste oil and hazardous materials at MDA L was never used.

**1-001(j) Septic Tank**

This SWMU was actually an aboveground tank used for the storage of dielectric gas and not a septic tank. HRMB indicates the tank was removed according to UST regulations and that the tanks integrity was confirmed. SWQB therefore concurs with the decision to remove this SWMU from the permit although no erosion potential evaluation was conducted at the site.

**3-039 (a) and 8-007 Silver Recovery Units**

No erosion potential assessment is required for these sites and the SWQB concurs with HRMB's decision to remove them from the permit. This decision is based on the NFA information which indicates the units were contained within buildings during the entire time of their operations and no spills or leaks associated with the units were reported.

**16-012 (o,q,v,w,y,z) Container Storage-Rest House**

SWQB will not require AP 4.5 assessment at these sites and concurs with HRMB's decision to remove these SWMUs from the RCRA permit because: 1) the AP 4.5 scores at SWMUs located in the same area were low (AP 4.5 scores were 15.3); 2) the container storage-rest houses had no exterior drains, and 3) recent field screening indicated no HE material leaked and/or spread from the container storage-rest houses.

**16-025(g2) Magazine**

This SWMU is a building which is now under or in the immediate vicinity of a disturbed soil area associated with the construction of State Road 501. It had been used for the storage of non-HE materials such as aluminum powder, lead oxide, and barium nitrate and was destroyed in 1950. SWQB is concerned that no sampling of the disturbed area associated with the construction of State Road 501 was conducted. There is no evidence from the information provided that the non-HE material had not been released from the site. In addition, no AP 4.5 has been conducted at the site to provide SWQB with an assessment for erosion potential. SWQB therefore recommends an AP 4.5 be conducted at this site and that verification in the form of sampling and/or process knowledge which indicates no releases occurred at this SWMU.

**53-007(h) Aboveground Storage Tanks**

These tanks contained waste solvents, organics and carcinogens. Both tanks were located below the hot cell room in Experimental Area A of building TA-53-3. Both also had waste lines. SWQB is concerned that there is no clear evidence that a release did not occur. Also, since the tanks were connected to waste lines, SWQB is concerned that these lines may have discharged to the environment and thus potentially contaminate surface water. SWQB recommends an AP 4.5 be done at the site to identify whether any potential soil erosion problems associated with the waste lines exist.

**Storage Areas, TAs 3, 14, 16**

The following SWMUs out of a list of 15 had AP 4.5 assessments which resulted in low scores:

14-004(b), 16-012(i), and 16-012(t). SWQB concurs that these SWMUs can be removed from the RCRA permit.

Although HERMB characterized all 15 SWMUs as eligible for removal from the RCRA permit due to cleanup of contaminants at these sites to an acceptable RCRA level of risk, SWQB requests that the 12 SWMUs without AP 4.5 scores be assessed for erosion potential. SWQB believes that without the AP 4.5 scores, evaluation of the risk to surface water contamination due to the level of contaminants left in place is not possible. Therefore, SWQB can not recommend the following SWMUs be removed from the RCRA permit at this time.

3-001(a,b,c), 3-002(b), and 16-012(l,j,l-p,u,z)

**3-035(a) Underground Storage Tank**

SWQB concurs with HRMB's decision to remove this SWMU from the RCRA permit for the reason stated in the NFA proposal, and will not require an AP 4.5 assessment at this site.

**3-035(b) Underground Storage Tank**

SWQB concurs with HRMB's decision to remove this SWMU from the RCRA permit. This decision is based on the information provided in the NFA proposal which indicate there were no leaks reported at this site and therefore no potential releases to surface water.

**15-014(m) Active Drainline and Outfall**

This SWMU has an AP 4.5 assessment score of 21.5, therefore, the erosion potential is low. The SWMU is categorized in the NFA proposal as a SWMU with releases that were characterized and/or remediated under another authority which adequately addressed corrective action. SWQB is not aware of any NPDES corrective action associated with this SWMU, and can not verify there were no releases of contaminants from the outfall. SWQB will concur with HRMB for the removal of this SWMU from the RCRA permit, however, if the SWAT review of the erosion assessment reveals there are problems at the site SWQB will request that this SWMU be reinstated onto the RCRA permit.

**16-010(g) Wastewater Treatment Facility**

This SWMU has an AP 4.5 score of 46, therefore, the erosion potential is medium. The SWMU is categorized in the NFA proposal as a SWMU with releases that were characterized and/or remediated under another authority which adequately addressed corrective action. SWQB is not aware of any NPDES corrective action associated with this SWMU, and can not verify that there were no releases of contaminants from the outfall. There is no surface water/sediment information for this SWMU. SWQB recommends the erosion problems be addressed at this site before it is removed from the permit.

**3-020(a) Disposal Pit**

The AP 4.5 score at this site is 3.6, therefore, the erosion potential is low. In addition, although there was a release at this site, the contaminated soil was removed to comply with the UST regulation limits, and the area was graded and paved as part of a parking lot. Therefore, potentially remaining residues are inaccessible for contamination to surface waters. SWQB concurs with the decision to remove this SWMU from the RCRA permit.

21-027(b) Drainline

The AP 4.5 score for this SWMU is 47, therefore, the erosion potential for this site is medium. The NFA proposal indicates this SWMU is a drainline that was used for storm water diversion from a bermed area associated with a fuel tank. The AP 4.5 indicates there are actually two outfalls. One is an active NPDES outfall (03A034) which discharges treated cooling water from TA-21-166 and TA-21-167 to the south edge of DP Mesa. The second outfall was identified as an outfall discharging south into LA Canyon from a cooling tower associated with TA-21-152. The NFA proposal indicated that sampling at the site found no organic analytes present, however, radionuclides were elevated, but not above baseline for the TA-21 baseline value. SWQB was not aware that TA-21 baseline values for rad have had been approved by HRMB. SWQB is concerned that TA-21 baseline values are higher than the facility established baseline values for rad and that does not reflect an adequate protection of surface water. Therefore, SWQB does not recommend this SWMU be approved for removal from the RCRA permit until the erosion potential at this site is addressed adequately, and the SWQB concerns associated with the TA-21 rad levels are resolved.



GARY E. JOHNSON  
GOVERNOR

December 23, 1998

James H. Davis, Ph.D., Chief  
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Santa Fe, New Mexico 87502

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ENVIRONMENT DEPARTMENT  
Hazardous & Radioactive Materials Bureau  
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PETER MAGGIORE  
SECRETARY

RE: Comments on Notice of Intent to Approve a Modification to RCRA Permit No. NM0890010515 US Department of Energy/Los Alamos National Laboratory (LANL), New Mexico

Dear Dr. Davis:

This letter is in response to the Surface Water Quality Bureau (SWQB) comments, dated November 25, 1998, to the referenced document above. The Public Comment period ended on December 4, 1998 and the Hazardous and Radioactive Material Bureau (HRMB) is responding to SWQB comments. HRMB appreciates the time SWQB spent on reviewing and providing comments.

SWQB comments are based on the fact that erosion potential scoring (AP 4.5) has not been performed for several sites or that the AP4.5 score is high. HRMB realizes the importance of the AP 4.5 scoring for evaluation of sites with surface water concerns. HRMB has evaluated the 99 referenced sites for no further action (NFA) and found them to be appropriate for NFA with regard to RCRA and HRMB concerns. HRMB is concerned with the potential migration of hazardous constituents which may pose a threat to human health and the environment and concurs with SWQB that AP 4.5 scores should be performed for the sites where there is an indication for the presence of hazardous constituents. The information provided by LANL indicates that the majority of the sites included in this notice of intent did not manage or receive hazardous constituents and are appropriate for NFA. Attached is a response to site specific concerns expressed by SWQB regarding these SWMUs.

If you have any questions regarding this matter please call me at 827-1567 or Mr. John Kieling at 827-1558 extension 1012.

Sincerely,

Robert S. (Stu) Dinwiddie, Ph.D., Manager  
RCRA Permits Management Program  
Hazardous and Radioactive Materials Bureau

RSD:jek

attachment

File: RED LANL G/P/98 and HSWA LANL G/P/98  
Track: LANL, 12/23/98, na, SWQB/Davis, HRMB/Dinwiddie, RE, File

**Attachment**

**Response to SWQB on Notice of Intent to Approve a Modification for RCRA Permit**

The following is a response to SWQB comments.

1. SWQB has concurred with HRMB that the following SWMU's are appropriate for NFA:  
1-001(i,j,k,n), 3-009(b,c), 3-009(e), 3-009(h), 3-012(a), 3-020(a), 3-035(a,b), 3-039(a), 7-003(c), 7-003(d), 8-006(b), 8-007, 14-004(b), 15-014(m), 16-005(I), 16-006(f,i), 16-012(a,b,c,e,f,g,h,i,k, o,q,r,s,t,v,w,y,z), 16-025(c), 16-026(i2), 16-031(g), 16-032(d,e), 16-034(g), 21-012(a), 21-024(m), 35-003(I), 39-003, 40-001(a), 46-008(c), 52-002(b,c,d), 54-001(c), and 54-013(a).
2. SWMU's that are duplicates or are to be investigated as part of another SWMU will be addressed for NFA at a later date. HRMB will work with SWQB in achieving AP 4.5 scores from DOE/LANL for those SWMUs.
3. The following SWMU's are septic systems which have associated an outfall, for which SWQB has expressed concerns since AP 4.5 scoring was not done. These sites are appropriate for NFA based on the evidence that they did not manage or receive hazardous waste. The erosion concerns of SWQB can be addressed through Water Quality and Hydrology Group (ESH-18) at LANL. ESH-18 has agreed to work with SQWB and perform AP 4.5 evaluations on these sites, if warranted.

1-001(h,i)	Septic tanks #s 142, 269 and drainlines-no longer exist
9-003(f)	Settling tank and drainlines-no longer exists
9-005(b,c,e,f,h)	Septic tank and drainlines-sanitary waste only
9-007	Basket pit and drainlines-no longer exists

4. The following SWMU's do not have any additional components such as an outfall and do not "day-lite" to the environment and did not manage or receive hazardous constituents, hence are appropriate for NFA:

3-018	Cesspool-never used
8-003(b,c)	Septic tank, drainline, leachfield or seepage pit-sanitary waste only
9-003(e)	Electric control manhole-no longer exists
16-005(o)	Septic tank and drainline and drainfield-sanitary waste only
16-006(b)	Septic tank and drainline and leachfield-sanitary waste only
33-004(e)	Septic tank and drainline and drainfield-no longer exists
33-004(f)	Septic tank and drainline-tank pumped-did not discharge
36-003(c)	Septic tank, drainline, seepage pit-sanitary waste only
39-006(b)	Septic tank and drainline distribution box and leachfield-sanitary waste only
52-002(f)	Septic tank, seepage pit-tank pumped-did not discharge

5. The following SWMU's address specific concerns expressed by SQWB:

**SWMU 0-005 Landfill**

Based on the information provided by LANL to HRMB this area was a garden, only used for an experimental study to examine the transport of radioactive particulates from the ground surface to tomato plants as a result of rain splash between 1976 and early 1980s. Four short-lived radio

nuclides, TA-182 (half life 115 days), Ce-141 (half life 33 days), Sb-124 (half life 60 days), and Sc-46 (half life 84 days) were used in these experiments, which have long since decayed to negligible levels. No hazardous materials were used at this site. This site is appropriate for NFA because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents. An AP 4.5 is pending according to the surface water assessment site list.

#### SWMU 3-009(f) Surface Disposal

Based on the information provided by LANL this site was never associated with the management of hazardous waste and/or constituents. The SWMU consists of road fill and a few concrete pieces. SWMU 3-009(f), a surface disposal area is appropriate for NFA because it never managed any RCRA solid or hazardous waste.

#### SWMU 11-007 Surface Disposal

SWMU 11-007 is a surface disposal area containing large blocks of concrete and road building debris. It has never been used for management of RCRA hazardous wastes and/or constituents, therefore is appropriate for NFA. Concerns regarding violation of Section 2201 of the Water Quality Control Commission Regulations should be forwarded to LANL by SWQB.

#### SWMU 16-005(f) Decommissioned Septic System

Based on the information provided by LANL this site was never associated with the management of hazardous waste and/or constituents. The SWMU consisted of a 1500 gallon septic tank, associated line, distribution box and outfall connected to several bathrooms along the west side of building TA-16-260. The septic tank was monitored and found to be free of radioactive contamination and a high explosives hazard. This tank was abandoned in 1952 for the bathrooms from this building were connected to the site-wide sanitary waste water treatment system. This SWMU is appropriate for NFA as it has never been used for the management of RCRA hazardous waste and/or constituents.

#### SWMU 52-001(a, b, and c) UHTREX Equipment

Based on the process knowledge, SWMUs 52-001(a, b and c) were never used for management of nonradioactive hazardous constituents. The sites underwent D&D in 1989 and were decontaminated to levels below DOE guidelines for radioactivity, the sites are appropriate for NFA. Radioactive contamination remaining in the soil and its potential for entering the watercourse as refuse is strictly a SWQB concern. An AP 4.5 is pending according to the surface water assessment site list. These SWMUs are appropriate for NFA as they have never been used for the management of RCRA hazardous waste and/or constituents.

### SWMU 16-025(g2) Magazine

SWMU 16-025(g2) was a storage building constructed in 1944 and destroyed in 1950. It was located on the western edge of S-Site. There were never any documented cases of a release to the environment at this location. The area around the SWMU has been disturbed during construction of the State Road 501. According to LANL, the building TA-16-108 is probably under the State Road 501 which is elevated and fully graded for drainage. Construction of the road involved moving large quantities of soil that would have dispersed any of the remains from this SWMU.

### SWMU 53-007(b) Aboveground Storage Tanks

SWMU 53-007(b) is identified as two tanks located in the hallway below the hot cell room of building TA-53-3. Both tanks were installed on the concrete floor of the hallway in 1974. One tank was stainless steel and the other was fiberglass. The fiberglass tank was never used. The stainless steel tank was used for small-scale dissolution experiments and may have contained waste solvents, organics and/or carcinogens. Liquids for the experiment were piped via glass tubing from the hot cell to the stainless steel tank; the wastes were then picked up by EM-7 for disposal as there was no outlet drain from the tank. Both tanks have been dismantled and removed from TA-53-3. Based on information provided by LANL there have been no documented releases or spills associated with these tanks. Since these tanks were located inside the building, secondary containment systems-floor drains connected to the radioactive liquid waste system and a catch basin in the truck loading area outside the building would have captured any leakages. These containment systems are part of PRSs 53-006(b and c). SWMU 53-007(b) is appropriate for NFA because no release to the environment has occurred at this site.

### Storage Areas, TAs 3, 14, and 16

The following SWMU's are regulated by RCRA through 40 CFR 262 standards as less-than-ninety day storage areas and satellite accumulation areas. These sites are visited as part of facility wide inspections done through IIRMB's Enforcement and Inspection Program in addition to institutional controls and maintenance.

SWMU 03-001(a)	Less-than-ninety-day	TA-3, Former Operable Unit 1114
SWMU 03-001(b)	Satellite Accumulation Area	TA-3, Former Operable Unit 1114
SWMU 03-001(c)	Less-than-ninety-day	TA-3, Former Operable Unit 1114
SWMU 03-002(b)	Satellite Accumulation Area	TA-3, Former Operable Unit 1114
SWMU 16-012(d)	Satellite Accumulation Area	TA-16, Former Operable Unit 1082
SWMU 16-012(j)	Satellite Accumulation Area	TA-16, Former Operable Unit 1082
SWMU 16-012(i)	Satellite Accumulation Area	TA-16, Former Operable Unit 1082
SWMU 16-012(m)	Satellite Accumulation Area	TA-16, Former Operable Unit 1082
SWMU 16-012(n)	Satellite Accumulation Area	TA-16, Former Operable Unit 1082
SWMU 16-012(p)	Less-than-ninety-day	TA-16, Former Operable Unit 1082
SWMU 16-012(u)	Satellite Accumulation Area	TA-16, Former Operable Unit 1082
SWMU 16-012(x)	Satellite Accumulation Area	TA-16, Former Operable Unit 1082



# **Attachment C**

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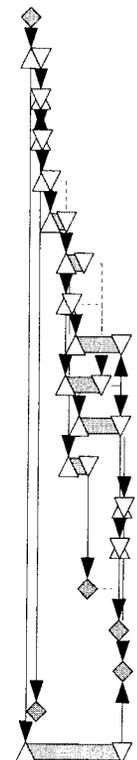
*Schedule*

01 MORTANDAD WATERSHED

1.1 MIDDLE MORTANDAD/TEN-SITE

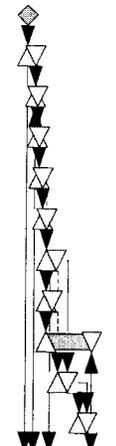
AH TA-35 FIELD WORK

D311AH0302	TA35: Start RFI Field Work	0	05APR04*	
D311AH0304	TA35: Prepare For Readiness Review	28	05APR04	12MAY04
D311AH0306	TA35: Conduct Readiness-Review	1	13MAY04	13MAY04
D311AH0308	TA35: Mobilize	5	14MAY04	20MAY04
D311AH0312	TA35: Conduct Land & RAD Survey	20	21MAY04	18JUN04
D311AH0314	TA35: Geomorphic Mapping	40	21JUN04	16AUG04
D311AH0320	TA35: Collect & Submit Surface Samples	42	17AUG04	15OCT04
D311AH0322	TA35: Collect & Submit Subsurface Samples	15	17AUG04	07SEP04
D311AH0324	TA35: Waste Management	108	20SEP04	04MAR05
D311AH0326	TA35: Sample Analysis	85	18AUG04	21DEC04
D311AH0328	TA35: Validate & Authenticate Data (CDM)	99	01OCT04	04MAR05
D311AH0330	TA35: Write Post Field Operations Report	50	31AUG04	10NOV04
D311AH0332	TA35: Focused Validation & Assessment	10	07MAR05	18MAR05
D311AH0334	TA35: Demobilize	5	28FEB05	04MAR05
D311AH0336	TA35: Post Field Operations Report Complete	0		10NOV04
D311AH0338	TA35: RFI Field Work Complete	0		04MAR05
D311AH0340	TA35: All Data in FIMAD	0		18MAR05
D311AH03AB	TA35: Safety Basis Approval	0		12MAY04
D311AHCA	Contingency	235*	05APR04	18MAR05



AT TA-4,5,52,63 FIELD WORK

D311AT0302	TA 4,5,52,63: Start Ph I&II RFI Field Work	0	01JUL04	
D311AT0304	TA 4,5,52,63: Prepare For Readiness Review	22	01JUL04	02AUG04
D311AT0306	TA 4,5,52,63: Conduct Readiness-Review	4	03AUG04	06AUG04
D311AT0308	TA 4,5,52,63: Mobilize	5	09AUG04	13AUG04
D311AT0312	TA 4,5,52,63: RAD & Land Survey	10	16AUG04	27AUG04
D311AT0314	TA 4,5,52,63: Geomorphic Mapping	10	30AUG04	13SEP04
D311AT0320	TA 4,5,52,63: Cllect & Submt Srfce & Hand Augd Smp	22	14SEP04	14OCT04
D311AT0322	TA 4,5,52,63: Collect & Submit Subsurface Sample	15	14SEP04	04OCT04
D311AT0324	TA 4,5,52,63: Waste Management	106	15SEP04	25FEB05
D311AT0326	TA 4,5,52,63: Sample Analysis	22	27OCT04	30NOV04
D311AT0328	TA 4,5,52,63: Validate & Authenticate Data (CDM)	20	13JAN05	10FEB05



Data Date: 01OCT03  
Run Date: 09JUN04 15:38



04AC

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	FY04 FY05 FY06 FY07 FY08 FY09 FY10 FY11										
					Gantt Chart Area										
D311AT0330	TA 4,5,52,63: Write Post Field Operations Report	10	28SEP04	12OCT04	[Gantt Bar]										
D311AT0332	TA 4,5,52,63: Focused Validation & Assessmnt	10	11FEB05	25FEB05	[Gantt Bar]										
D311AT0334	TA 4,5,52,63: Demobilize	5	18FEB05	25FEB05	[Gantt Bar]										
D311AT0336	TA 4,5,52,63: Post Field Operations Rpt Complete	0		12OCT04	[Gantt Bar]										
D311AT0338	TA 4,5,52,63: RFI Field Work Complete	0		25FEB05	[Gantt Bar]										
D311AT0340	TA 4,5,52,63: All Data In FIMAD	0		25FEB05	[Gantt Bar]										
D311AT03AB	TA 4,5,52,63: Safety Basis Approval	0		02AUG04	[Gantt Bar]										
D311ATCA	Contingency	158*	01JUL04	25FEB05	[Gantt Bar]										

Data Date 01OCT03  
Run Date 09JUN04 15:38

