

LAWL TA 35



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Date: March 3, 2005  
Refer To: ER2005-0099

Mr. James Bearzi  
NMED-Hazardous Waste Bureau  
2905 Rodeo Park Drive East  
Building 1  
Santa Fe, NM 87505-6303



**SUBJECT: REQUEST FOR APPROVAL OF INVESTIGATION REPORT  
OUTLINE FOR THE MIDDLE MORTANDAD/TEN  
AGGREGATE AREA**

Dear Mr. Bearzi:

Enclosed please find the proposed outline for the Middle Mortandad/Ten Site Aggregate Area Investigation Report. This outline closely follows the outline in Section XI.C of the NMED Consent Order, but has been modified to allow for the multiple Solid Waste Management Units (SWMUs) and Areas of Concerns (AOCs) within the aggregate area to be combined into manageable sections within the report. These sub-areas correspond to the investigation sub-areas identified in the approved Sampling and Analysis Plan (SAP) and Addendum. In accordance with Section XI.A of the draft Consent order, we request your review and approval so that we can proceed with preparation of the report within the schedule required in the Consent Order.

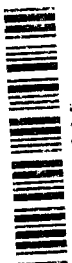
If you have any questions, please contact Becky Coel-Roback at 505-665-5011 or Woody Woodworth at 505-665-5820.

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



Mr. James Bearzi  
ER2005-0099

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March 3, 2005

DM/DG/BCR/ds

Attachment: Proposed outline for the Middle Mortandad/Ten Site Aggregate Investigation Report.

Cy :(w/enc)

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# INVESTIGATION REPORT (*Version B—Subarea organization*)

## Title Page

## Executive Summary

## Table of Contents

### 1.0 Introduction

*Describes purpose and type of investigation; general descriptions of the Mortandad Watershed, Middle Mortandad/Ten Site Aggregate; what results are presented.*

### 2.0 Background

*Describes location of Middle Mortandad/Ten Site Aggregate, TA-35, other TAs included in aggregate. Briefly describes historical site uses, locations of current and former structures and features, possible sources of contamination, history of releases or discharges, results of previous investigations, labeled figure(s) showing relevant features and investigation locations.*

*May include descriptions of sampling and/or monitoring activities conducted prior to ER Project if applicable and appropriate.*

### 3.0 Scope of Activities

*Briefly describes all activities performed during the investigation; includes chronological summary of sampling campaigns and remedial activities.*

*Summaries of procedures/methods used for field activities, including drilling methods, sampling methods, field screening methods, health and safety monitoring, geodetic surveying or GPS methods, geomorphic characterization/sample selection methods.*

### 4.0 Regulatory Criteria

*(Note – this section moved up one position in the outline because this information applies to all subareas; moving this prior to subarea sections avoids repetition of this information.)*

*Discusses goal of the investigation in context of risk-based screening levels; includes tables of SSLs, SALs, and ESLs; cites the Risk Screening Assessment Appendix (F).*

### 5.0 Mesa Top Subarea

#### 5.1 Field Investigation Results

##### 5.1.1 Surface Conditions

*Briefly describes current surface conditions in the subarea; ground cover, vegetation, industrial development, erosion potential.*

##### 5.1.2 Exploratory Drilling or Excavation Investigations

*Describes locations, methods, and depths of boreholes and excavations used in investigation. Borehole logs included as Appendix B.*

**5.1.3 Subsurface Conditions**

*Description of stratigraphy/lithology of the subarea based on previous studies and borehole logs; description and locations of known man-made subsurface structures.*

**5.1.4 Groundwater Conditions**

*Descriptions of groundwater conditions based on previous studies, wells in surrounding areas.*

**5.1.5 Surface Water Conditions**

*Description of occurrence of surface water in the subarea – runoff, drainage (natural and man-made drainages), sediment transport.*

**5.2 Site Contamination**

**5.2.1 Soil, Rock, and Sediment Sampling**

*Includes dates, numbers, locations, depth intervals, methods of all sampling within subarea; analyses requested.*

**5.2.2 Soil, Rock, and Sediment Sample Field Screening Results**

*Methods, frequency of field screening used, including specific instruments and their limitations. Results – whether and how they affected the investigation.*

**5.2.3 Soil, Rock, and Sediment Sampling Analytical Results**

*Summary of analytical results – refer to tables in Appendix D, E. List identified COPCs*

**5.3 Conclusions**

*Summarizes results of investigation – comparison to appropriate screening levels; identify potential receptors; refer to results of risk screening assessments in Appendix F.*

**6.0 Ten Site Slope Subarea**

**6.1 Field Investigation Results**

**6.1.1 Surface Conditions**

**6.1.2 Exploratory Drilling or Excavation Investigations**

**6.1.3 Subsurface Conditions**

**6.1.4 Groundwater Conditions**

**6.1.5 Surface Water Conditions**

## **6.2 Site Contamination**

- 6.2.1 Soil, Rock, and Sediment Sampling
- 6.2.2 Soil, Rock, and Sediment Sample Field Screening Results
- 6.2.3 Soil, Rock, and Sediment Sampling Analytical Results

## **6.3 Conclusions**

## **7.0 Mortandad Slope Subarea**

### **7.1 Field Investigation Results**

- 7.1.1 Surface Conditions
- 7.1.2 Exploratory Drilling or Excavation Investigations
- 7.1.3 Subsurface Conditions
- 7.1.4 Groundwater Conditions
- 7.1.5 Surface Water Conditions

### **7.2 Site Contamination**

- 7.2.1 Soil, Rock, and Sediment Sampling
- 7.2.2 Soil, Rock, and Sediment Sample Field Screening Results
- 7.2.3 Soil, Rock, and Sediment Sampling Analytical Results

### **7.3 Conclusions**

## **8.0 Pratt Canyon Subarea**

### **8.1 Field Investigation Results**

- 8.1.1 Surface Conditions
- 8.1.2 Exploratory Drilling or Excavation Investigations
- 8.1.3 Subsurface Conditions
- 8.1.4 Groundwater Conditions
- 8.1.5 Surface Water Conditions

### **8.2 Site Contamination**

- 8.2.1 Soil, Rock, and Sediment Sampling
- 8.2.2 Soil, Rock, and Sediment Sample Field Screening Results
- 8.2.3 Soil, Rock, and Sediment Sampling Analytical Results

### **8.3 Conclusions**

## **9.0 Ten Site Canyon Subarea**

### **9.1 Field Investigation Results**

- 9.1.1 Surface Conditions
- 9.1.2 Exploratory Drilling or Excavation Investigations

- 9.1.3 Subsurface Conditions
- 9.1.4 Groundwater Conditions
- 9.1.5 Surface Water Conditions

**9.2 Site Contamination**

- 9.2.1 Soil, Rock, and Sediment Sampling
- 9.2.2 Soil, Rock, and Sediment Sample Field Screening Results
- 9.2.3 Soil, Rock, and Sediment Sampling Analytical Results

**9.3 Conclusions**

**10.0 East Ten Site Slope Subarea**

**10.1 Field Investigation Results**

- 10.1.1 Surface Conditions
- 10.1.2 Exploratory Drilling or Excavation Investigations
- 10.1.3 Subsurface Conditions
- 10.1.4 Groundwater Conditions
- 10.1.5 Surface Water Conditions

**10.2 Site Contamination**

- 10.2.1 Soil, Rock, and Sediment Sampling
- 10.2.2 Soil, Rock, and Sediment Sample Field Screening Results
- 10.2.3 Soil, Rock, and Sediment Sampling Analytical Results

**10.3 Conclusions**

**11.0 Sigma Mesa Subarea**

**11.1 Field Investigation Results**

- 11.1.1 Surface Conditions
- 11.1.2 Exploratory Drilling or Excavation Investigations
- 11.1.3 Subsurface Conditions
- 11.1.4 Groundwater Conditions
- 11.1.5 Surface Water Conditions

**11.2 Site Contamination**

- 11.2.1 Soil, Rock, and Sediment Sampling
- 11.2.2 Soil, Rock, and Sediment Sample Field Screening Results
- 11.2.3 Soil, Rock, and Sediment Sampling Analytical Results

**11.3 Conclusions**

**12.0 Summary of All Subareas / Aggregate**

*(Note – this section does not appear in the Order outline)*

*Summarizes conclusions from all subareas, discusses the relationships among the subareas, and evaluates the significance of the individual (subarea) conclusions for the aggregate as a whole.*

### **13.0 Recommendations**

*Discusses the need, if any, for further investigation, corrective action, or monitoring; provides schedule for further action if necessary. If no action recommended, include schedule for submittal of petition for permit modification.*

### **14.0 References**

### **15.0 Tables**

*Regulatory criteria/screening levels  
Survey location data  
Field screening results  
Analytical data – refer to tables in Appendix D, E*

### **16.0 Figures**

*Vicinity map  
Site plan  
Borehole and other sampling locations  
Sample screening/analytical data – refer to tables in Appendix D  
Geologic cross-section*

## **Appendices**

### **A. Field Methods**

*Detailed method descriptions.*

### **B. Boring Logs**

*Graphical borehole logs.*

### **C. Analytical Program and Quality Assurance/Quality Control Review**

*Analytical methods used, explanation of data qualifiers, qualifier tables by request number and sample ID.*

- 1.0 Mesa Top Subarea**
- 2.0 Ten Site Slope Subarea**
- 3.0 Mortandad Slope Subarea**
- 4.0 Pratt Canyon Subarea**
- 5.0 Ten Site Canyon Subarea**
- 6.0 East Ten Site Slope Subarea**
- 7.0 Sigma Mesa Subarea**

### **D. Data Review**

*Samples taken tables, FD tables, SID tables, analytical results maps.*

- 8.0 Mesa Top Subarea
- 9.0 Ten Site Slope Subarea
- 10.0 Mortandad Slope Subarea
- 11.0 Pratt Canyon Subarea
- 12.0 Ten Site Canyon Subarea
- 13.0 East Ten Site Slope Subarea
- 14.0 Sigma Mesa Subarea

## **E. Analytical Suites and Results**

*Data tables on CD.*

- 1.0 Mesa Top Subarea
- 2.0 Ten Site Slope Subarea
- 3.0 Mortandad Slope Subarea
- 4.0 Pratt Canyon Subarea
- 5.0 Ten Site Canyon Subarea
- 6.0 East Ten Site Slope Subarea
- 7.0 Sigma Mesa Subarea

## **F. Risk Assessment**

**Executive Summary**

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  - 3.2 Sampling Results
  - 3.3 Conceptual Site Model
  - 3.4 Human Health Risk
    - 3.4.1 *Screening Levels*
    - 3.4.2 *Human Health Risk Screening Results*
    - 3.4.3 *Interpretation*
  - 3.5 Ecological Risk
    - 3.5.1 *Screening Levels*
    - 3.5.2 *Ecological Risk Screening Results*
    - 3.5.3 *Interpretation*



- 4.0 Ten Site Slope Subarea**
  - 4.1 Site Descriptions**
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  - 4.3 Conceptual Site Model**
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    - 4.4.1 Screening Levels*
    - 4.4.2 Human Health Risk Screening Results*
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    - 4.5.1 Screening Levels*
    - 4.5.2 Ecological Risk Screening Results*
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    - 5.4.3 Interpretation*
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    - 5.5.1 Screening Levels*
    - 5.5.2 Ecological Risk Screening Results*
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## **6.0 Pratt Canyon Subarea**

### **6.1 Site Descriptions**

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#### **6.4.1 Screening Levels**

#### **6.4.2 Human Health Risk Screening Results**

#### **6.4.3 Interpretation**

### **6.5 Ecological Risk**

#### **6.5.1 Screening Levels**

#### **6.5.2 Ecological Risk Screening Results**

#### **6.5.3 Interpretation**

## **7.0 Ten Site Canyon Subarea**

### **7.1 Site Descriptions**

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#### **7.4.3 Interpretation**

### **7.5 Ecological Risk**

#### **7.5.1 Screening Levels**

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#### **7.5.3 Interpretation**

## **8.0 East Ten Site Slope Subarea**

### **8.1 Site Descriptions**

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### **8.3 Conceptual Site Model**

### **8.4 Human Health Risk**

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#### ***8.4.2 Human Health Risk Screening Results***

#### ***8.4.3 Interpretation***

### **8.5 Ecological Risk**

#### ***8.5.1 Screening Levels***

#### ***8.5.2 Ecological Risk Screening Results***

#### ***8.5.3 Interpretation***

## **9.0 Sigma Mesa Subarea**

### **9.1 Site Descriptions**

### **9.2 Sampling Results**

### **9.3 Conceptual Site Model**

### **9.4 Human Health Risk**

#### ***9.4.1 Screening Levels***

#### ***9.4.2 Human Health Risk Screening Results***

#### ***9.4.3 Interpretation***

### **9.5 Ecological Risk**

#### ***9.5.1 Screening Levels***

#### ***9.5.2 Ecological Risk Screening Results***

#### ***9.5.3 Interpretation***



**10.0 Conclusions and Recommendations**

**11.0 References**

**12.0 Ecological Scoping Checklist and Surface Water Assessments**

**13.0 Tables**

**14.0 Figures**