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Statement of Basis Approval of No Further Action Volume 4 of 30 January 2000 ER Site 38 Operable Unit 1335 Round 4

Sandia National Laboratories/NM

Sandia National Laboratories

Statement of Basis
Approval of No Further Action
Volume 4 of 30

January 2000

ER Site 38
Operable Unit 1335
Round 4

(RCRA Permit No. NM5890110518)

NFA Originally Submitted June 19, 1996
RSI Originally Submitted November 1998

Environmental Restoration Project

United States Department of Energy
Albuquerque Operations Office

Statement of Basis
Approval of No Further Action

January 2000

ER Site 38
Operable Unit 1335
Round 4

NFA Originally Submitted June 19, 1996

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ACRONYMS AND ABBREVIATIONS

CEARP	Comprehensive Environmental Assessment and Response Program
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
HSWA	Hazardous and Solid Waste Amendments
KAFB	Kirtland Air Force Base
NFA	no further action
PID	photoionization detector
QC	quality control
RCRA	Resource and Conservation Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
SNL/NM	Sandia National Laboratories/New Mexico
SWMU	solid waste management unit
TA	technical area
TOP	technical operating procedure
TPH	total petroleum hydrocarbons
UST	underground storage tank

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1. INTRODUCTION

1.1 ER Site Identification Number and Name

Sandia National Laboratories/New Mexico (SNL/NM) is proposing a confirmatory sampling no further action (NFA) decision for Environmental Restoration (ER) Site 38, Oil Spills (Building 9920), Operable Unit 1335. ER Site 38 was identified in the Hazardous and Solid Waste Amendment (HSWA) Module IV (EPA August 1993) of the SNL/NM Resource Conservation and Recovery Act (RCRA) Hazardous Waste Management Facility Permit (NM5890110518) (EPA August 1992).

1.2 SNL/NM Confirmatory Sampling NFA Process

This proposal for a determination of a confirmatory sampling NFA decision has been prepared using the criteria presented in Section 4.5.3 of the SNL/NM Program Implementation Plan (SNL/NM February 1995). Specifically, this proposal will "contain information demonstrating that there are no releases of hazardous waste (including hazardous constituents) from solid waste management units (SWMU) at the facility that may pose a threat to human health or the environment" (as proposed in the Code of Federal Regulations (CFR) Section 40 Part 264.51[a][2]) (EPA July 1990). The HSWA Module IV contains the same requirements for an NFA demonstration:

> Based on the results of the RFI [RCRA Facility Investigation] and other relevant information, the Permittee may submit an application to the Administrative Authority for a Class III permit modification under 40 CFR 270.42(c) to terminate the RFI/corrective measures study process for a specific unit. This permit modification application must contain information demonstrating that there are no releases of hazardous waste including hazardous constituents from a particular SWMU at the facility that pose threats to human health and/or the environment, as well as additional information required in 40 CFR 270.42(c) (EPA August 1993).

If the available archival evidence is not considered convincing, SNL/NM performs confirmatory sampling to increase the weight of the evidence and allow an informed decision regarding whether to proceed with the administrative-type NFA or to return to the site characterization program for additional data collection (SNL/NM February 1995).

The U.S. Environmental Protection Agency (EPA) acknowledged that the extent of sampling required may vary greatly, stating that

> the agency does not intend this rule [the second codification of HSWA] to require extensive sampling and monitoring at every SWMU. . . . Sampling is generally required only in situations where there is insufficient evidence on which to make an initial release determination. . . . The actual extent of sampling will vary . . . depending on the amount and quality of existing information available (EPA December 1987).

In requesting a confirmatory sampling NFA decision for ER Site 38, Oil Spills (Building 9920), this proposal is using existing administrative/archival information and the results of confirmatory sampling conducted in August 1995 to satisfy the permit requirements. Appendix A presents the sampling and analysis plan that was implemented.

A site is eligible for an NFA proposal if it meets one or more of the following criteria set forth in the Environmental Restoration Document of Understanding (NMED November 1995)

NFA Criterion 1: The site cannot be located or has been found not to exist, is a duplicate potential release site (PRS) or is located within and therefore, investigated as part of another PRS.

NFA Criterion 2: The site has never been used for the management (that is, generation, treatment, storage, or disposal) of RCRA solid or hazardous wastes and/or constituents or other CERCLA hazardous substances.

NFA Criterion 3: No release to the environment has occurred, nor is likely to occur in the future.

NFA Criterion 4: There was a release, but the site was characterized and/or remediated under another authority which adequately addresses corrective action, and documentation, such as a closure letter, is available.

NFA Criterion 5: The PRS 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 land use.

Specifically, ER Site 38 is being proposed for a confirmatory sampling NFA decision because the site clearly has not released hazardous waste or constituents into the environment (Criterion 5).

1.3 Local Setting

SNL/NM occupies 2,829 acres (ac) of land owned by the U.S. Department of Energy (DOE) with an additional 14,920 ac of land provided by land-use permits with Kirtland Air Force Base (KAFB), the United States Forest Service, the State of New Mexico, and the Isleta Pueblo lands. SNL/NM has been involved in nuclear weapons research, components development, assembly, testing, and other nuclear activities since 1945.

ER Site 38 (Figure 1-1) lies on KAFB land assigned to DOE/SNL/NM and is located east of Technical Areas (TA) III and V. The site covers 0.01 ac of land at a mean elevation of 5,459 feet above sea level (SNL/NM January 1996).

ER Site 38 lies on Tijeras gravelly fine sandy loam, with permeabilities ranging from 0.6 to 2.0 inches per hour (USDA June 1977). The geologic and hydrologic conditions at ER Site 38 are expected to be similar to those measured at the Chemical Waste Landfill, Background Well 2 (located in TA III). Geologic information obtained from the lithologic log compiled for the Chemical Waste Landfill well indicates that the local area is covered with over 1,000 feet of proximal to mid-fan alluvial deposits. When construction of the Chemical Waste Landfill well was completed in 1985, the depth to groundwater was measured at 496 feet (IT May 1994).

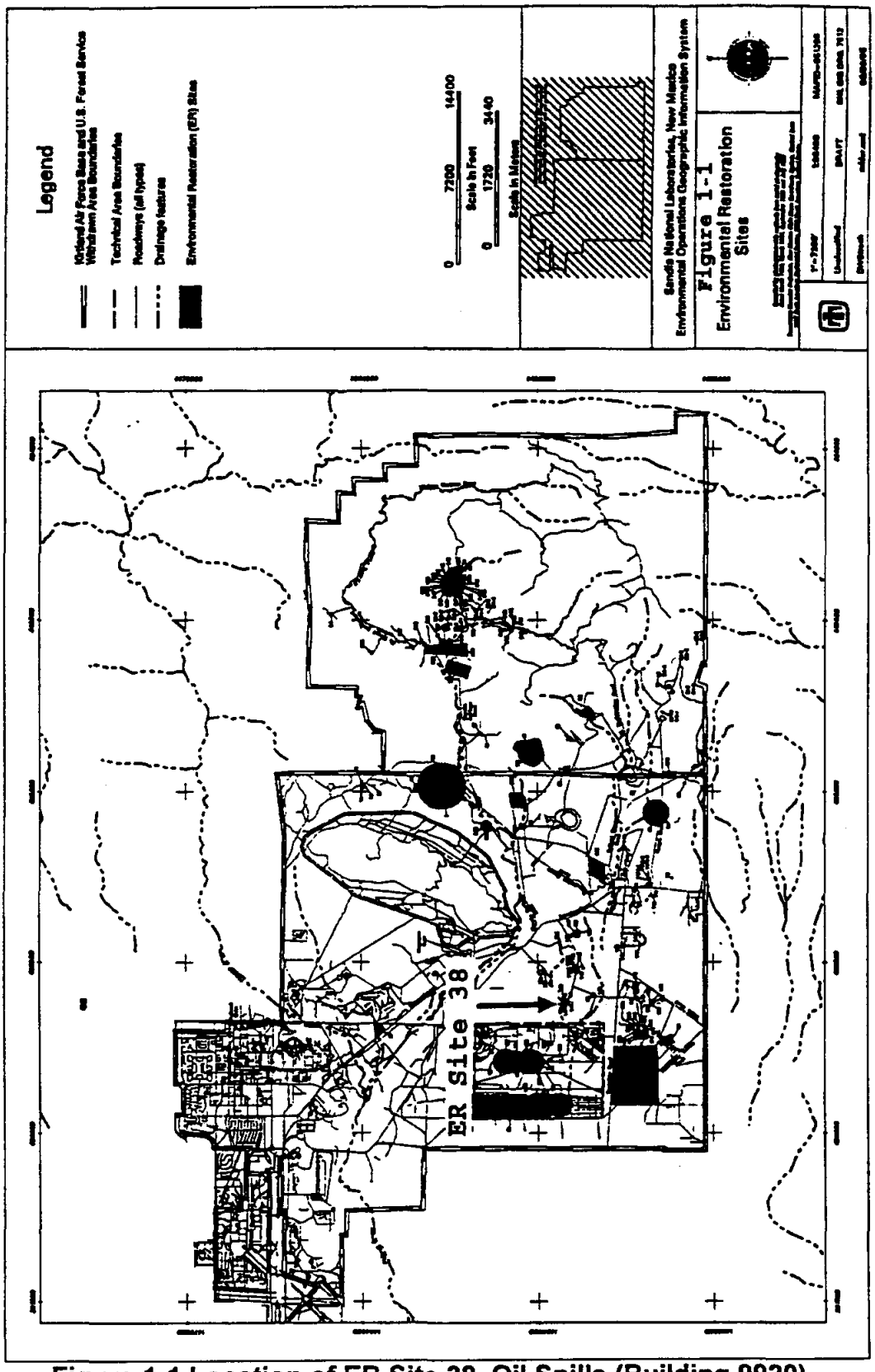

Figure 1-1 Location of ER Site 38, Oil Spills (Building 9920)

2. HISTORY OF THE SWMU

2.1 Sources of Supporting Information

In preparation to requesting a confirmatory sampling NFA decision for ER Site 38, SNL/NM conducted a background archival study and collected soil samples to confirm that no release of hazardous constituents occurred. Historical background information sources included existing records and reports of site activity. Additionally, analytical results from confirmatory samples verify that during the site operational activity, hazardous waste or constituents clearly were not released into the environment.

The following information sources, hierarchically listed with respect to assigned validity, were available for use in evaluating ER Site 38:

- Five soil sample analyses obtained from backfill and soil below the center of the former underground storage tank (UST)
- One interview with SNL/NM facility personnel
- Miscellaneous information sources, including the SNL/NM Geographic Information System and SNL/NM personnel correspondence (memoranda, letters, and notes)
- Photographs and field notes from several site inspections conducted by SNL/NM staff
- Field screening for organic vapors
- The Comprehensive Environmental Assessment and Response Program (CEARP) Phase I report (DOE September 1987) and CEARP records contained in the SNL/NM Environmental Operations Records Center
- The RFA report (EPA April 1987)

Using this information, a brief history of ER Site 38 and a discussion of all relevant evidence regarding past practices and releases at the site have been prepared and are presented in this proposal for a confirmatory sampling NFA decision.

2.2 Previous Audits, Inspections, and Findings

ER Site 38 was identified during investigations conducted under the CEARP (DOE September 1987). The CEARP noted that fuel for Building 9920 was stored in a 1,000-gallon UST (first used in 1959) and that there were occasional overflow spills that discolored the ground around the tank (38-74). The regulatory disposition of the site was uncertain for Federal Facility Site Discovery and Identification Findings, Preliminary Assessment, and Preliminary Site Inspection. Insufficient information also prevented calculating a Hazard Ranking System score for the site.

Subsequent to the CEARP inspection, the EPA conducted an RFA. The RFA report (EPA April 1987) discusses the same information presented in the CEARP.

2.3 Historical Operations

ER Site 38 is the location of a former fuel oil UST that was placed north-northeast of Building 9920 and north-northwest of Building 9926 (Figure 2-1). The UST had a capacity of 1,000 gallons, and its base was placed approximately 8 feet below the ground surface in 1959. No information was found concerning the removal of the UST, which is thought to have occurred in 1989 (38-58). The excavation was backfilled.

The site was investigated based on an interview record that noted "there have been occasional overfills that have discolored the ground around the tank" (38-74, DOE September 1987). However, no discoloration is currently evident in the soils around the former tank location, and it is assumed that the discolored soil was removed at the time of the UST removal.

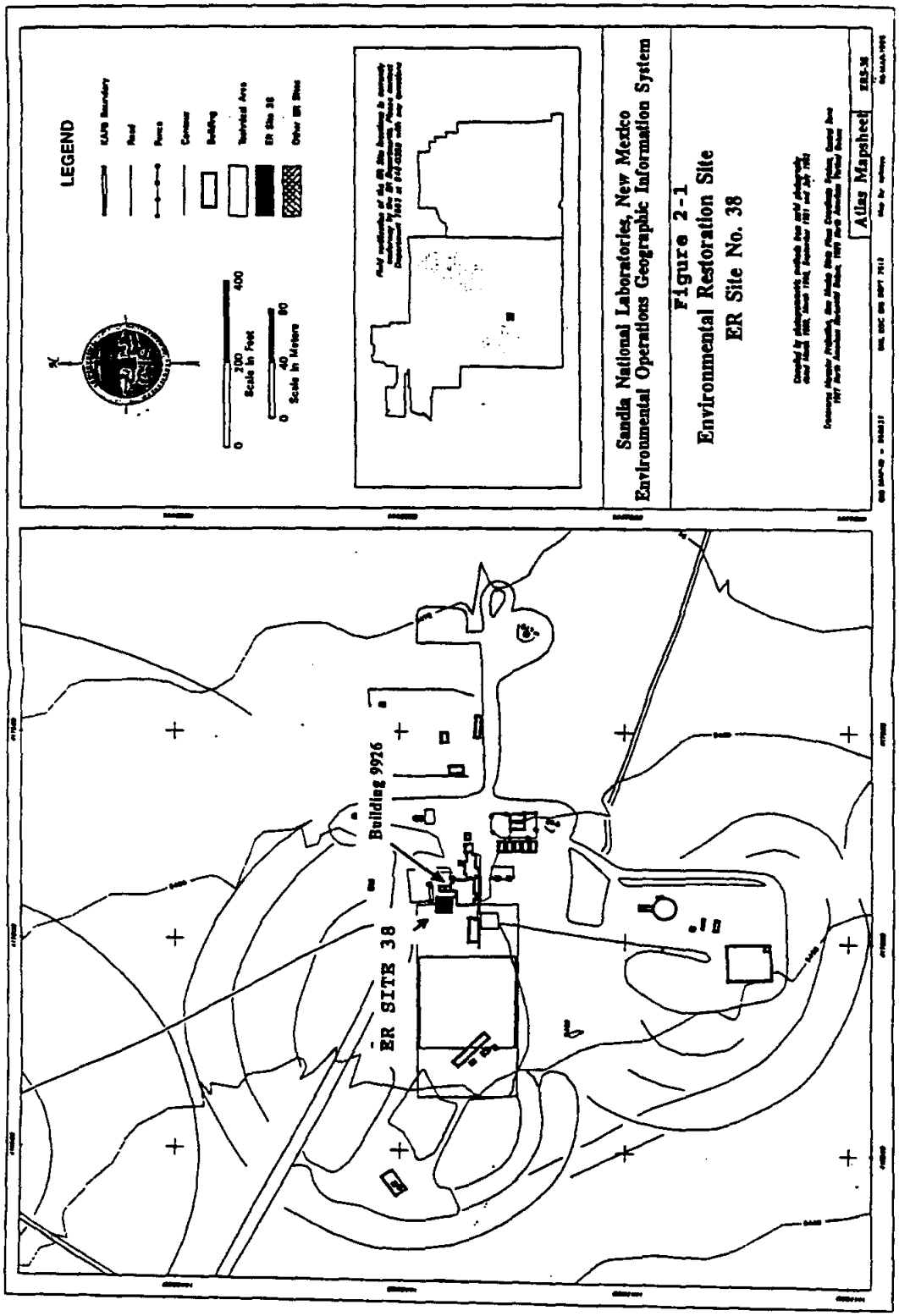

Figure 2-1
ER Site 38, Oil Spills (Building 9920)

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3. EVALUATION OF RELEVANT EVIDENCE

3.1 Unit Characteristics

ER Site 38 is the location of a former UST that is believed to have been removed in 1989. The purpose of this UST was to provide fuel oil to Buildings 9920 and 9926.

3.2 Operating Practices

There are no records on operating practices at ER Site 38. However, an interview record and the CEARP report that ". . . occasional overfills . . . have discolored the ground around the tank" (38-74, DOE September 1987).

3.3 Presence or Absence of Visual Evidence

There is no visual evidence at ER Site 38 indicating that fuel oil spills occurred. No discoloration is currently evident in the soils around the former tank location, and it is assumed that the discolored soil was removed at the time of the UST removal.

3.4 Results of Previous Sampling/Surveys

3.4.1 Surface-Soil Sampling

This SWMU had been scheduled for supplementary reconnaissance sampling under the CEARP, but no analytical data have been identified to confirm that this sampling was conducted.

3.4.2 Unexploded Ordnance/High Explosives Survey

An unexploded ordnance/high explosives survey was not conducted at ER Site 38 because weapons/explosives were not tested at this site.

3.4.3 Gamma Radiation Survey

Based on the history of the site, anthropogenic radionuclides from SNL/NM activities are absent. Therefore, a gamma radiation survey was not conducted.

3.5 Assessment of Gaps in Information

There is no definitive record stating when the UST was removed from ER Site 38.

3.6 Confirmatory Sampling

Five soil samples and one duplicate sample were collected from a single boring location at five depth intervals. Field screening for organic vapors was performed at the sampling locations during the sampling activities. Sampling equipment was cleaned, and an equipment blank and field blank were obtained. The sampling and analysis plan (Appendix A) provides details on the sampling event.

3.6.1 Field Screening

During soil sampling activities at ER Site 38, field-screening measurements were taken of all soil sampling horizons. The field screening was conducted in accordance with the methodologies prescribed in the sampling and analysis plan (Appendix A) and was performed with a photoionization detector (PID) for organic vapors. Organic vapors detected by the PID monitor during sampling activities never exceeded the action level of 0.5 part per million that would warrant an upgrade to health and safety Level C attire.

3.6.2 Laboratory Analysis Results for Soil Samples

The analytical data package and Quality Assurance/Quality Control (QC) documentation are available and can be viewed in the SNL/NM Environmental Operations Records Center. The analytical fractions and corresponding analytical laboratory used to perform analyses on each fraction were total petroleum hydrocarbons (TPH) by FTIR, Lockheed Analytical Services, Las Vegas, Nevada.

Table 3-1 presents sample identification, sample depth, sample date, and analytical results. Samples were analyzed for TPH using a modified EPA Method 418.1 (EPA 1986). TPH was not detected in any of the samples at the method detection limit of 40 milligrams per kilogram.

3.6.3 QC Summary

Field and laboratory QC samples were analyzed so that data quality could be evaluated. The following subsections summarize the QC data and findings.

Table 3-1
Summary of TPH Results, ER Site 38 Soil Samples

Sample Location:		38-BH1	38-BH1	38-BH1	38-BH1	38-BH1	38-BH1
ER Sample ID:		024988-01-S	024989-01-S	024990-01-S	024991-01-S	024992-01-S	024993-01-SD
LAL Sample No:		L5156-1	L5156-2	L5156-3	L5156-4	L5156-5	L5156-6
Sample Type:		On-site	On-site	On-site	On-site	On-site	Duplicate
Sample Depth:		0 feet	5 feet	10 feet	15 feet	18 feet	18 feet
Sample Date:		08/17/95	08/17/95	08/17/95	08/17/95	08/17/95	08/17/95
	Action Level[b]						
Total petroleum hydrocarbons[a]	100 mg/kg	<40 mg/kg	<40 mg/kg	<40 mg/kg	<40 mg/kg	<40 mg/kg	<40 mg/kg

[a]Analyzed by modified EPA Method 418.1 (EPA October 1986)
[b]Action level as reported in State of New Mexico July 1990.
LAL = Lockheed Analytical Laboratory

3.6.3.1 Data Verification and Validation

Verification and validation of chemical measurement data were performed in accordance with the SNL/NM Environmental Operations Records Center "Verification and Validation of Chemical and Radiochemical Data" Revision 0 (TOP [technical operating procedure] 94-03) (SNL/NM July 1994). Data validation was performed on the organic data using Level 1 and Level 2 checklists specified in the above-referenced procedure.

3.6.3.2 Field QC Data

Field QC samples submitted to the contract laboratory during sampling activities at ER Site 38 included one field duplicate sample, one equipment rinsate blank, and one field blank. A laboratory control sample and laboratory control sample duplicate were extracted and analyzed in addition to a matrix spike and matrix spike duplicate. Results for the QC samples are discussed below.

Field Duplicate Sample

One duplicate soil sample (ER Sample ID 024993-01-SD) was collected from the Sample Location 38-BH1 at the 18-feet depth. The duplicate sample was analyzed for TPH, and the results of the duplicate are consistent with its counterpart (Table 3-1).

Field and Equipment Rinsate Blanks

Aqueous field and equipment rinsate blanks were collected following completion of soil sampling and final equipment decontamination at ER Site 38. TPH was not detected in the blank samples at levels above the practical quantitation limit (Table 3-2). The results obtained from analysis of the blank samples indicate that decontamination procedures were effective and project samples were not cross-contaminated by the sampling equipment or containers.

Table 3-2
Summary of TPH Results, ER Site 38 Blank Samples

Sample Location:		38-BH1	38-BH1
ER Sample ID:		024994-01-FB	024995-01-EB
LAL Sample No:		L5156-7	L5156-9
Sample Type:		Aqueous Field Blank	Aqueous Equipment Blank
Sample Depth:		NA	NA
Sample Date:		08/17/95	08/17/95
	PQL		
Total Petroleum Hydrocarbons[a]	1 mg/L	<1 mg/L	<1 mg/L

[a]Analyzed by modified EPA Method 418.1 (EPA November 1986).
LAL = Lockheed Analytical Laboratory
NA = Not applicable
PQL = Practical Quantitation Limit

Matrix Spike Analysis

Matrix spike and matrix spike duplicate analyses were performed to assess sample matrix effects on analytical accuracy, in accordance with requirements of the sampling plan (Appendix A). The field team supervisor designated the soil sample from Sample Location 38-BH1 at the 18-feet interval (ER Sample ID 024990-01-S) for matrix spike analysis on the Analysis Request/Chain of Custody Record that accompanied the samples to the contract laboratory. The matrix spike was performed for all fractions of the sample in accordance with approved laboratory procedures. Matrix spike results were reported in the laboratory analytical data report as percent recovery and relative percent difference calculations. Samples were analyzed for THP and were within the acceptance limits established for percent recovery and relative percent difference (Table 3-3).

3.6.4 Laboratory QC Data

Laboratory QC samples were analyzed at the laboratories, and the data were included in the analytical reports with cross-references to the corresponding ER samples. Laboratory QC data include laboratory control and laboratory control duplicate for soil and water samples and a method blank analysis. Table 3-4 provides results for the TPH analyses of these samples. There were no reported QC excursions in the narrative to the Lockheed analytical report, and all data are acceptable as reported.

Table 3-3
Summary of TPH Results for Matrix Spike and Matrix Spike Duplicate ER Site 38 Soil Samples

Laboratory Sample ID	Analyte	Spike Added (mg/kg)	Matrix Spike Concentration (mg/kg)	Percent Recovery	Relative Percent Difference	QC Limits	
						Percent Recovery	Relative Percent Difference
26678MS	Total petroleum hydrocarbons[a]	81.2	74.8	88	NA[b]	70-120	NA[b]
26678MSD	Total petroleum hydrocarbons[a]	81.7	75.9	89	1	70-120	30

[a]Analyzed by modified EPA Method 418.1 (EPA November 1986).
[b]Not applicable to matrix spike analysis.
MS = Matrix spike
MSD = Matrix spike duplicate
QC = Quality control

3.6.5 Nonconformances/Variances to Sampling and Analysis Plan

A nonconformance is an unplanned and unintended deviation from the established sampling and analysis plan or procedures. A variance is an approved and controlled change to the established sampling and analysis plan or procedures. There were no nonconformance/variance issues associated with the sampling at ER Site 38.

3.7 Rationale for Pursuing a Confirmatory Sampling NFA Decision

SNL/NM is proposing an administrative NFA decision for ER Site 38 because the site 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 (Criterion 5). The site contained a 1,000-gallon UST that was removed in 1989. Confirmatory sampling and analysis of backfill and soils below the former tank location indicate TPH is not present in any of the samples above the method detection limit of 40 milligrams per kilogram. Therefore, based on archival information and analytical results from confirmatory sampling, ER Site 38 is recommended for confirmatory sampling NFA decision because the site 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 (Criterion 5).

Table 3-4
Summary of TPH Results for Laboratory Control, Laboratory Control Duplicate and Method Blank Samples

Laboratory Sample ID	Analyte	Spike Added (mg/kg)	Measured Concentration (mg/kg)	Percent Recovery	Relative Percent Difference	QC Limits	
						Percent Recovery	Relative Percent Difference
26678LCS soil	Total petroleum hydrocarbons[a]	80.6	77.1	96	NA	70-120	NA
26678LCSD soil	Total petroleum hydrocarbons[a]	81.2	76.2	94	2	70-120	30
26683LCS water	Total petroleum hydrocarbons[a]	2.457	2.151	88	NA	70-120	NA
26683LCSD water	Total petroleum hydrocarbons[a]	2.457	2.260	92	5	70-120	30
26678MB soil	Total petroleum hydrocarbons[a]	NA	<40	NA	NA	PQL = 40 mg/kg	

[a]Analyzed by modified EPA Method 418.1 (EPA November 1986).
LCS = Laboratory Control Sample
LCSD = Laboratory Control Sample Duplicate
NA = Not applicable
PQL = Practical Quantitation Limit

4. CONCLUSION

Based upon the evidence cited above, no potential remains for a release of hazardous waste (including hazardous constituents) that may pose a threat to human health or the environment. Therefore, ER Site 38 is recommended for an NFA determination.

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5. REFERENCES

5.1 ER Site References

Section 5.1 contains a bibliographical list ER Site 38 documents cited in this proposal. This list is arranged numerically by the numbers assigned to each document.

38-58 Sandia National Laboratories/New Mexico, October 1991, Kathy Gaither memorandum to ERST file, "Oil Spills at Building 9927." Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

38-74 Sandia National Laboratories/New Mexico, January 1995. Environmental Operations Record Center Record Number ER/7585/1335/38/85-68.

5.2 Reference Documents

Department of Energy (DOE), Albuquerque Operations Office, Environmental Safety and Health Division, Environmental Program Branch, September 1987, draft. "Comprehensive Environmental Assessment and Response Program (CEARP) Phase I: Installation Assessment, Sandia National Laboratories, Albuquerque," Department of Energy, Albuquerque Operations Office, Albuquerque, New Mexico.

DOE, see Department of Energy.

EPA, see U.S. Environmental Protection Agency.

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Sandia National Laboratories/New Mexico (SNL/NM), January 1996, draft. "RCRA Facility Investigation Work Plan for Operable Unit 1335, Southwest Test Area," Sandia National Laboratories, Albuquerque, New Mexico.

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State of New Mexico Environmental Improvement Board, July 1990. "Underground Storage Tank Regulations," Part 12, Section 12.09.D.3.b, State of New Mexico Environmental Improvement Board, Santa Fe, New Mexico.

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Environmental Protection Agency (EPA), December 1987. "Hazardous Waste; Codification Rule for 1984 RCRA Amendments; Final Rule," *Federal Register*, Vol. 52, Title 40, Parts 144, 264, 265, 270, and 27, Environmental Protection Agency, Washington, D.C.

United States Environmental Protection Agency (EPA), April 1987. "Final RCRA Facility Assessment Report of Solid Waste Management Units at Sandia National Laboratories, Albuquerque, New Mexico," Contract No. 68-01-70389. EPA Region 6.

United States Environmental Protection Agency (EPA), October 1986. "RCRA Facility Assessment Guidance," EPA/530-86-053, PB87-107769, Washington, D.C.

United States Environmental Protection Agency (EPA), November 1986. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd ed., Washington, D.C.

APPENDIX A
Confirmatory Sampling and Analysis Plan for ER Site 38

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DRAFT

SAMPLING AND ANALYSIS PLAN
FOR UST ON-SITE INVESTIGATION
AT ER SITE 38
SANDIA NATIONAL LABORATORIES/NEW MEXICO

May 1995

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1.0 Introduction

1.1 Purpose

The purpose of the investigation is to determine the lateral and vertical extent of fuel oil at a former Underground Storage Tank (UST) Site, ER Site 38 at Sandia National Laboratories/New Mexico (SNL/NM) (Figure 1).

1.2 Scope

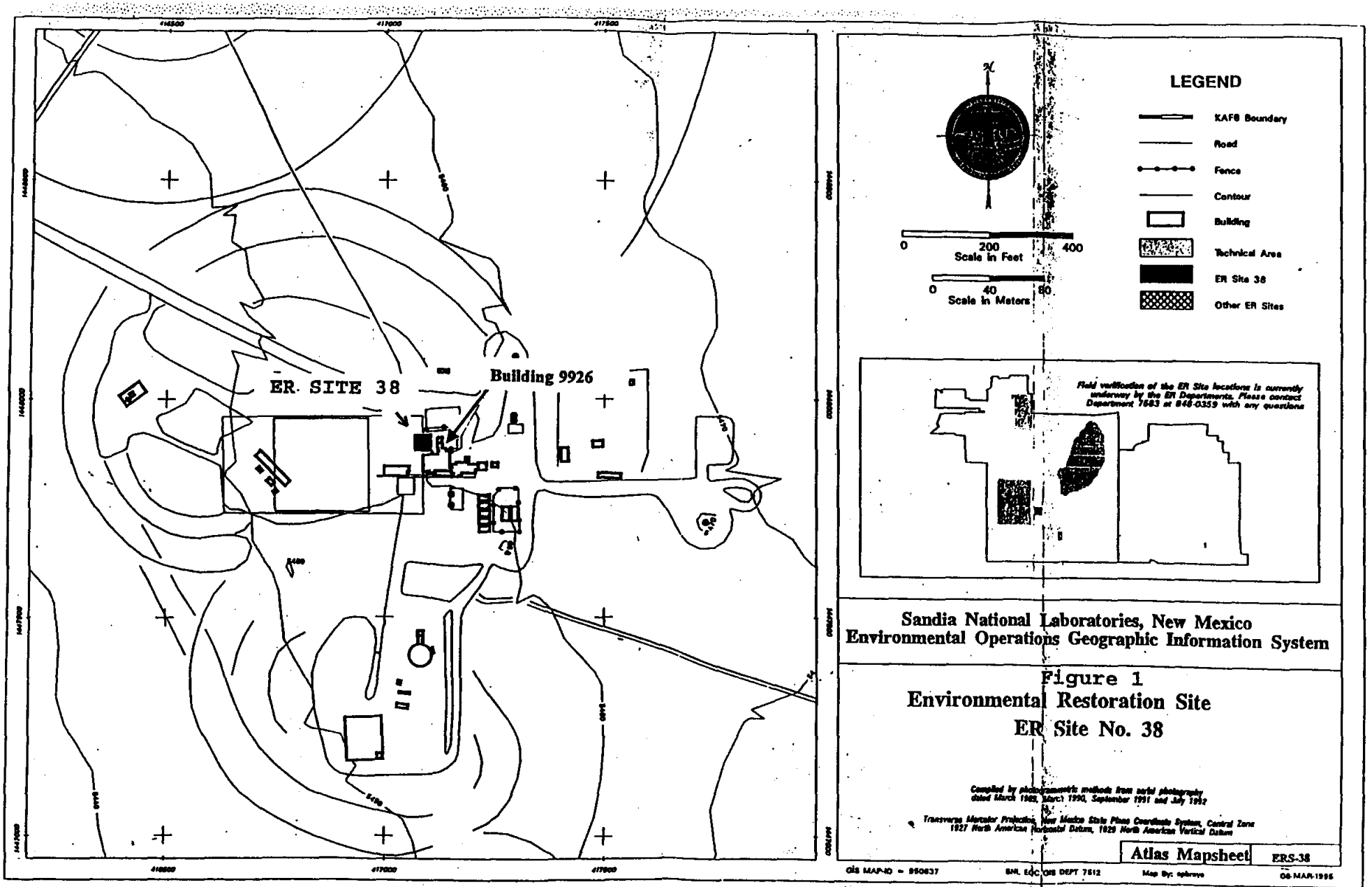
This plan defines the detailed methods needed to advance, describe, and sample soil borings at the UST site. The plan includes specific information for describing subsurface geology, field screening, and collecting soil samples for chemical analysis of Total Petroleum Hydrocarbons (TPH). This document provides information regarding project responsibilities, field and laboratory methods, waste management, and quality assurance/quality control activities required to collect defensible data from the site that will meet project goals.

The investigation will be performed according to guidance in the State of New Mexico Environmental Improvement Board (NMEIB) Underground Storage Tank Regulations (USTR) (NMEIB, 1989), Part 12, as clarified by "UST Soil/Water Sampling and Disposal Guidelines," revised May 25, 1993 (NMEIB, 1993). Specifically, for tanks less than 2,000 gallons, the regulations require collection of one sample under the center of the tank. (section II.B.1)

Site History

ER Site 38, the location of a former fuel oil UST, is situated north-northeast of Building 9920 and north-northwest of Building 9926 (Figure 2). The UST, which had a capacity of 1000 gallons, was installed in 1959 and removed in approximately 1989. The base of the UST was at an approximate depth of 8 feet below ground surface (bgs). No information could be found concerning the removal. The excavation was backfilled.

The site is being investigated since it was stated in a 1985 interview that "there have been occasional overfills that have discolored the ground around the tank." (74). No discoloration is currently evident in the soils around former tank location and it is assumed that the discolored soil was removed at the time of the tank removal.


ER SITE 38
Building 9926
LEGEND
KAFB Boundary
Road
Fence
Contour
Building
Technical Area
ER Site 38
Other ER Sites
0
200
400
Scale in Feet
0
40
80
Scale in Meters
Field verification of the ER Site locations is currently underway by the ER Departments. Please contact Department 7583 at 848-0359 with any questions
Sandia National Laboratories, New Mexico
Environmental Operations Geographic Information System
Figure 1
Environmental Restoration Site
ER Site No. 38
Compiled by photogrammetric methods from aerial photography dated March 1985, March 1990, September 1991 and July 1992
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone
1927 North American Horizontal Datum, 1929 North American Vertical Datum
Atlas Mapsheet
ERS-38
GIS MAP-ID = 950837
SNL EOC GIS DEPT 7612
Map By: rpbravo
08-MAR-1995

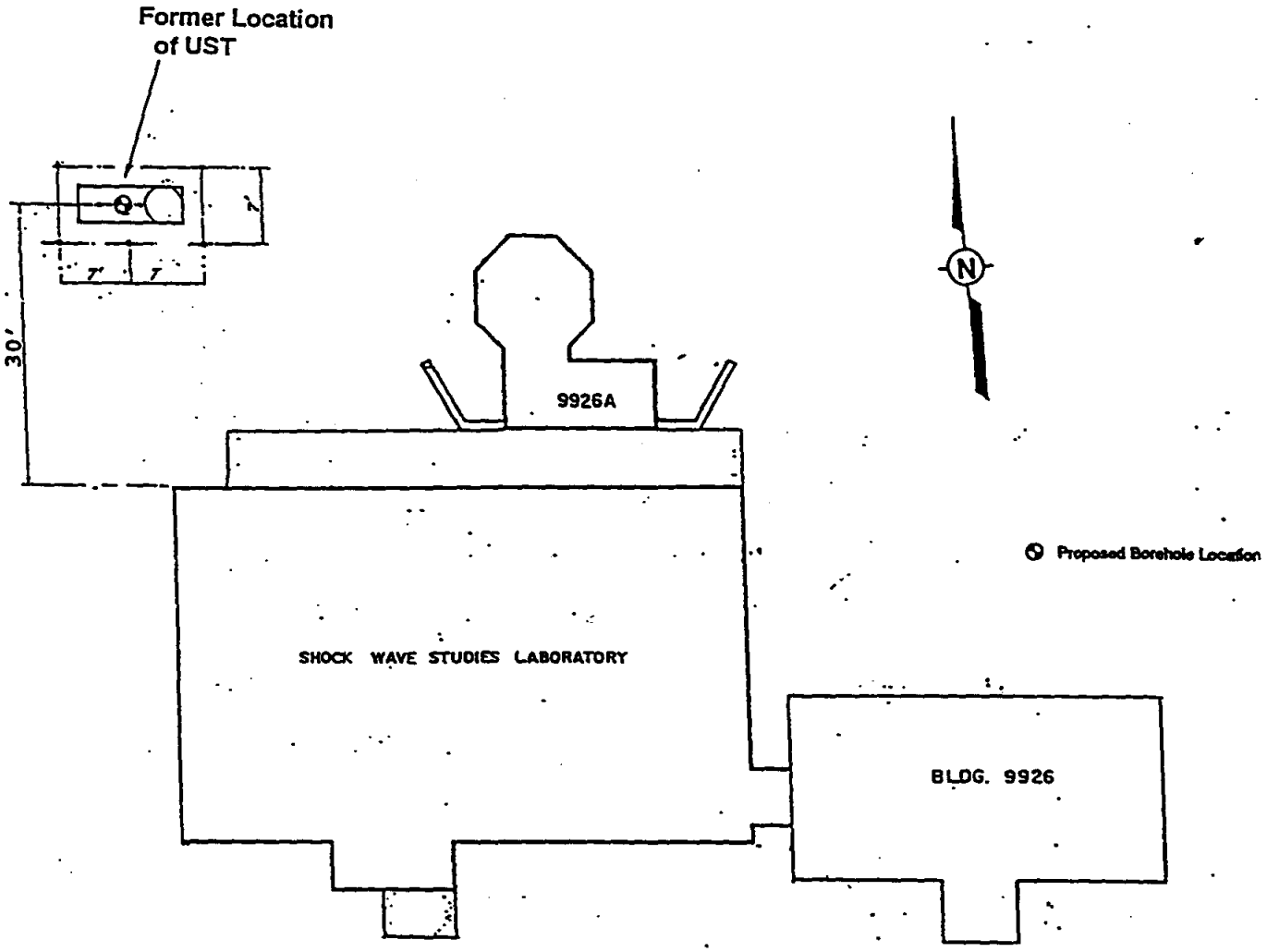


Figure 2
Sampling Location Map of ER Site 38, Sandia National Laboratories/New Mexico

2.0 Responsibilities

Personnel with defined responsibilities in this project include the following:

2.1 Task Leader

The SNL/NM Task Leader will function as the primary interface between SNL/NM and other organizations (e.g., the sampling team). The Task Leader, or designee, will provide day-to-day oversight of the project, evaluate any project changes and non-conformances and approve corrective actions, review and approve project data, and ensure that the final on-site investigation report is forwarded to the SNL/NM Environmental Operations Records Center and to the State of New Mexico. The Task Leader will interface with other SNL/NM organizations as needed and will be responsible for arranging utility clearances, digging permits, and personnel access to the area as required. The Task Leader will interface with the Generator Interface Department 7572 to ensure proper disposal of project-generated waste, and will notify the SNL/NM Agreement in Principle (AIP) Oversight Staff at least 10 days prior to beginning field work.

2.2 Site Investigation Team

On-site investigation activities will be conducted by a contractor with SNL/NM personnel responsible for operation of the Geoprobe™. If Geoprobe™ operations are not successful in collecting the required samples, mobilization of a hollow-stem auger drill rig may be required. These activities may be conducted by a contractor. Team-member positions and responsibilities are listed below.

2.2.1 Geologist

The geologist will coordinate and oversee the site investigation activities, manage all subcontractors in the field, review the field documentation, coordinate sample analyses with the SNL/NM Sample Management Office (SMO) and off-site laboratories, and prepare the final project reports for transmittal to the SNL/NM Task Leader. The geologist will ensure that all activities are conducted in strict accordance with this plan, and will provide other assistance to the SNL/NM Task Leader as requested. The geologist will serve as the Site Safety Officer, and will implement the site-specific health and safety plan .

2.2.2 Field Technician

Under direction of the geologist, one Field Technician will be responsible for collecting, monitoring, and shipping samples; completing sample control documentation; assisting the geologist in health and safety monitoring; and/or providing additional field support as

specified in this plan and any associated project plans and procedures. The field technician will also assist the geologist in the decontamination of all Geoprobe™ or auger sampling equipment between borings and between sites.

2.2.3 Task Manager

The Task Manager is responsible for the successful implementation of site investigation activities and will ensure that the technical objectives are achieved, will manage subcontractor performance (i.e., drilling subcontractor, if needed), and will communicate with the SNL/NM Task Leader on the progress of the project and any changes to this plan.

2.2.4 SNL/NM Field Personnel

Personnel from SNL/NM (Department 7584) will be responsible for the operation and maintenance of the Geoprobe™ and associated sampling equipment, and for performing the immunoassay field analyses.

2.3 Analytical Laboratory

The contract analytical laboratory will perform all analyses as directed by the geologist, in accordance with analytical methods specified in Section 3.0. The laboratory will maintain documentation of sample handling, custody information, and quality control data. The laboratory will be responsible for preparation of the analytical reports, which will include quality control data.

3.0 Sampling Objectives, Locations, and Frequency

3.1 Sampling Objectives

The sampling objective is to determine the extent of possible contamination at the former UST site as required by Part 1205 of the USTR. To fulfill this objective, soil samples will be collected from the soil boring using the Geoprobe™. If refusal of the Geoprobe™ occurs and the extent of contamination has not been determined, a hollow-stem auger drill rig (or, if necessary, an air-rotary casing hammer or a dual-tube percussion drill rig) will be mobilized to continue the investigation. Soil borings will be described and sampled at five-foot intervals. To examine the extent of contamination, the soil borings will be advanced until field screening and visual observation by the geologist indicate no further contamination. If field screening using a photoionization detector (PID) and visual observation is inconclusive in determining the extent of contamination, the SNL/NM EnSys Immunoassay® kit will be used to get a more accurate assessment of the presence or absence of contamination. The

EnSys Immunoassay® method is a semi-quantitative test that gives a presence/absence indication at one or two user-chosen detection levels. A determination of no further contamination will be based on (1) no evidence of staining/odor by visual observation, and PID readings below background determination, and/or (2) EnSys Immunoassay® responses below the selected detection levels. The detection level for immunoassay field screening will be 100 ppm according to the USTR (NMEIB, 1989). Additional standard concentrations may be selected. The immunoassay analyses will be performed by SNL/NM personnel at the request of the geologist or the SNL/NM Task Leader.

All samples shipped to the laboratory will be analyzed for TPH by Modified EPA 418.1 (EPA, 1986). Standard laboratory turnaround time will be requested for all analyses.

3.2

Sampling Locations

One Geoprobe™ soil borings will be advanced at site 38. One soil boring will be located within the area of highest known or suspected contamination, at the center of the former UST excavations. The first sample will be collected from a depth of one foot. Samples will then be collected every 5 feet until field screening methods indicate no further contamination (a minimum of 10 feet below deepest UST removal samples), as discussed above in Section 3.1, or until refusal of the Geoprobe™ occurs. If Geoprobe™ refusal occurs and the extent of contamination has not been delineated, borings will be advanced using hollow-stem auger or other appropriate drilling methods at locations adjacent to any Geoprobe™ borings.

3.3 Sampling Frequency

Soil samples will be collected at intervals of five feet or less for the entire depth of the boring. Each sample will be described and contamination will be assessed by visual observation and field screening with the PID for aromatic hydrocarbon vapor concentrations using head-space methods. The SNL/NM EnSys Immunoassay® kit will also be available to help determine the presence or absence of contamination. All samples will be submitted for analysis as described in Section 3.1.

For hollow-stem auger drilling, soil samples will be collected at intervals or five feet or less, beginning five feet below the last associated Geoprobe™ boring samples. Each sample will be described and contamination assessed by visual observation and sample screening with the

PID and/or EnSys Immunoassay® kit. All samples will be submitted for analysis as described in Section 3.1.

4.0 Operations and Procedures

This chapter presents field and analytical operations and procedures and includes a discussion of borehole advancement methods, equipment decontamination, sample collection, field measurements, analytical methods, sample management and custody, waste management, and prerequisites for field activities.

4.1 Borehole Advancement Procedures and Soil-Sample Collection Activities

The Geoprobe™ is mounted on a pickup and works by "hammering" a closed sample tube into the ground to a desired depth. The sample tube is then opened with a retrieval tool and the sample tube is advanced, taking in soil from a discrete zone. The sample is then brought to the surface and the soil is pushed out of the sample tube and immediately put into a sample container to avoid any loss of volatile compounds. If the level of contamination is deeper than the capabilities of the Geoprobe™ or the probe experiences refusal, then more aggressive drilling methods will be used to complete the investigation. If other drilling methods are needed, then a hollow-stem auger drill rig (or, if necessary, an air-rotary casing hammer or a dual-tube percussion drill rig) will be employed. If hollow-stem auger or percussion drilling is required, the soil samples will be collected by hammering a California-modified, 18-inch, 2.5-inch inside-diameter split-spoon core sampler (or similar device) into the undisturbed soil ahead of the drill bit. Counts of hammer strikes (blow counts) will be recorded on a field log. Samples will be extracted immediately from the split-spoon sampler, by personnel wearing clean latex gloves in addition to any protective gloves, for laboratory analysis and for volatile organic monitoring as described below. The remaining soil will be classified as described in Section 4.5.

Drilling and sampling activities will be performed in health and safety Level D (modified) in accordance with the HASP. Breathing zone conditions, as determined by breathing zone air monitoring with a PID, will warrant an upgrade to Level C (modified) at values $\geq$0.5 ppm according to the site-specific HASP. Level C conditions are not anticipated.

4.2 Borehole Abandonment Activities

Following the investigation, the Geoprobe™ borings will be filled with sand to within six to twelve inches bgs, plugged with bentonite to surface, and the site will be restored to its original grade and condition. If hollow-stem auger or other drilling methods are required, borings will be grouted from bottom to surface with a Portland cement/5% bentonite grout.

4.3 Decontamination

Decontamination of the Geoprobe™ sampling equipment will be done between each sampling event. Decontamination will include thoroughly washing the inside and outside of the sample tube with LIQUINOX™ and water; rinsing with distilled, deionized water; and allowing to air-dry before reusing. Decontamination will be done in accordance with FOP 94-26, "General Equipment Decontamination" (SNL/NM, 1994a).

In the event that hollow-stem augering or percussion drilling methods are needed to complete the investigation, all downhole equipment and materials (including, but not limited to, augers, drill pipe, rods, bits, and samplers) will be thoroughly decontaminated with a hot-water pressure washer prior to use on this project, between each boring, and prior to leaving the site. Between sample intervals the California-modified split-spoon sampler will be scrubbed with a solution of LIQUINOX™ and water; rinsed with distilled, deionized water; and allowed to air-dry before reusing. Decontamination will be done in accordance with FOP 94-26, "General Equipment Decontamination" (SNL/NM, 1994a).

All sample containers will be new and cleaned in accordance with Procedure QA 08-01, "Environmental Programs Department (7720) Procedure for Sample Management and Custody" (SNL/NM, 1991a). Decontamination activities for the hollow-stem auger drill rig and augers, if required, will be conducted in the SNL/NM decontamination pad in Technical Area III. Split-spoon samplers and Geoprobe™ rods and sample chambers will be decontaminated in plastic tubs, which will contain the decontamination fluids. All fluids derived from decontamination activities will be placed into 5-gallon buckets or 55-gallon, closed-top poly drums, as appropriate, and labeled according to the procedures outlined in Section 4.7.

4.4 Visual Soil Classification

Representative subsurface soil samples will be collected for visual classification and description of the color, moisture, soil structure, soil types, relative plasticity, Unified Soil Classification symbol, and total thickness of each soil layer, as required by the USTR

(NMEIB, 1989). Soil descriptions will follow methods described in FOP 94-05, "Borehole Lithologic Logging" (SNL/NM, 1994c). Soil classifications and a graphic log will be recorded on a copy of the boring log form.

4.5 Field Measurements

Samples retrieved during sampling activities will be field-screened for volatile organic compounds using head-space methods and a PID, as described in FOP 94-28, "Field Operating Procedure: Health and Safety Monitoring of Organic Vapors (Flame Ionization Detector (FID) and Photoionization Detector (PID)" (SNL/NM, 1994e), and the USTR head-space method (NMEIB, 1989). Results of head-space screening will be recorded on a sample screening log. In addition to visual observations and head-space screening, the SNL/NM EnSys Immunoassay® kit will be available to assist in determining the presence or absence of contamination.

Air monitoring for volatile organic vapors within the breathing zone will be performed every 15 minutes during drilling activities, using a PID. Results of air monitoring will be recorded on a site screening log. Field measurement equipment calibration and operation will be in accordance with the manufacturers' recommendations as described in the operations manuals.

4.6 Sample Management and Custody

Samples (including laboratory and immunoassay) will be handled to maintain sample integrity from collection through analysis. Sample management activities include documentation of sample locations and sampling conditions on the Sample Collection Log (SCL) form, assignment of unique sample identification numbers, initiation of sample custody with the Analysis Request and Chain of Custody Record (ARCOCR), completion of the sample label information, and completion of the ARCOCR detailing analysis instructions. Field observations and measurements will be recorded on appropriate field activity and sample screening forms, in accordance with FOP 94-25, "Documentation of Field Activities" (SNL/NM, 1994b). Sample management and custody activities will be performed in accordance with FOP 94-34, Field Sample Management and Custody" (SNL/NM, 1994f). Laboratory samples will be shipped via overnight carrier to the specified laboratory by the SMO.

4.7 *Waste Management*

The SNL/NM Task Leader will be responsible for overseeing the proper packaging and disposal of investigation-derived wastes (IDW). SNL/NM Department 7572 will be notified when waste materials have been generated, and will initiate appropriate disposal of waste materials generated under this plan. Department 7576 will be responsible for sample management and analysis. Waste will be managed in accordance with SNL/NM ES&H Manual MN471007.

All used disposable personal protective equipment (PPE) will be segregated from soil cuttings and unregulated trash and labeled as IDW. Sampling with the Geoprobe™ is not expected to generate large volumes of IDW. If auger drilling is employed, cuttings lifted to the surface will be collected in open-top, 55-gallon steel drums or Wrangler™ bags provided by SNL/NM. Soil cuttings will be segregated by boring; approximately 1 to 2 Wrangler™ bags or 8 to 12 drums will be filled per boring up to a maximum of 100 feet in depth. The following additional waste management methods will be employed:

- Soil cuttings will be segregated by boring, and segregated further by clean or contaminated soil, as determined with head-space, visual observation, and/or EnSys Immunoassay® methods. Disposal of soil will be based on laboratory analytical results.

- Wrangler™ bags or drums containing contaminated soil, decontamination water, and/or used PPE will be labeled as IDW. Labels will be appropriately completed, using a permanent pen, per SNL/NM ES&H Manual MN471001 and guidance from SNL/NM Department 7572. Information on the labels will include waste source, suspected contaminants, contents, depth generated, date of accumulation and storage start, and the name of the Task Leader.

- Disposal of any contaminated soil will be done per NMEIB USTR and Department 7572 guidance.

5.0 Quality Control

5.1 Field Quality Control

5.1.1 Field Documentation

Field documentation will be completed on standardized forms and include, at a minimum, the following:

- SCL containing: project identification, sample number, date and time of sampling, and location and depth of sample.
- ARCOCR containing: sample volume, sample container type, sample custody signatures, analyses requested, and sample team members.
- Soil boring log
- Sample screening log
- Site monitoring log
- Completed field log for each day in the field.

5.1.2 Duplicate Samples

A duplicate sample will be collected from the UST site . Duplicates will be collected at intervals which are most likely to have contamination, based on visual observation and screening. The duplicates will be composed of soil immediately adjacent to that from which the original sample is taken and will be analyzed to assess overall sampling and analysis system precision.

5.1.3 Equipment Rinsate Blanks

Equipment rinsate blank samples will be collected by pouring deionized water through a decontaminated sampler into appropriate sample bottles and analyzing for the same parameters as the soil samples. The equipment blank is intended to provide a check on the adequacy of the decontamination procedure, and will be collected after advancement of the first boring . One rinsate blank will be collected during the investigation.

5.1.4 Matrix Spike/Matrix Spike Duplicate

One soil matrix spike and matrix spike duplicate sample will be collected from the highest clean sample point.. The sample will be collected by doubling the volume of soil collected

and requesting a matrix spike/spike duplicate on the ARCOCR. These samples are intended to determine if the sample matrix is affecting recovery of any analytes.

5.2 Laboratory Quality Control

Laboratory quality control will be performed as required by the laboratory's quality control/quality assurance plan and according to the contractual arrangements between the laboratory and SNL/NM. The laboratory report will contain the results of all quality control analyses.

5.3 Data Review and Validation

Review of the laboratory data will be performed by SMO or the Task Manager, or designee, according to QA 11-01, "Environmental Programs Department Procedure for Validation of Chemical Measurement Data" (SNL/NM, 1991b). Unacceptable data or conditionally acceptable data will be identified and either not reported or reported with qualifiers.

6.0 Reporting

Prior to final report preparation, the Task Manager will notify the SNL/NM Task Leader of initial results to determine if additional sampling or analyses are necessary to complete the investigation. Following completion of the field investigation, the results will be presented in a summary report of the investigation, as specified in USTR Part 1206, which will include site figures, laboratory analytical reports, and all field documentation.

7.0 References

Sandia National Laboratories/New Mexico (SNL/NM), 1994a, "General Equipment Decontamination," *FOP 94-26*, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), 1994b, "Documentation of Field Activities," *FOP 94-25*, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), 1994c, "Borehole Lithologic Logging," *FOP 94-05*, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), 1994e, "Field Operating Procedure: Health and Safety Monitoring of Organic Vapors (Flame Ionization Detector (FID) and

Photoionization Detector (PID)," *FOP 94-28*, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), 1994f, "Field Sample Management and Custody," FOP 94-34, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), 1991b, "Environmental Programs Department Procedure for Validation of Chemical Measurement Data," *QA 11-01*, Sandia National Laboratories, Albuquerque, New Mexico.

Reference # 74 - Sandia National Laboratory, Jan 1995, New Mexico Record Center Service Number ER/7585/1335/38/85-68*

State of New Mexico Environment Department (NMED), 1993, "Underground Storage Tank (UST) Soil/Water Sampling and Disposal Guidelines, revised May 25, 1993," State of New Mexico Environment Department, Santa Fe, New Mexico.

State of New Mexico Environmental Improvement Board (NMEIB), 1989, "Underground Storage Tank Regulations, Part 12," State of New Mexico Environmental Improvement Board, Santa Fe, New Mexico.

U.S. Environmental Protection Agency (EPA), 1986, "Test Methods for Evaluating Solid Waste, Volumes 1A and 1B: Laboratory Manual Physical/Chemical Methods," *SW-846*, 3rd ed., U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.

*Since many of the tests conducted at SNL are classified, the SNL Reference Numbers refer to Sandia Records Center Reference Coding system which is intended to maintain the confidentiality of Sandia employees who were interviewed.

TABLE BOTTLE LIST SITE 38

Heading	Lab	Analyses	Medium	bottle type	preservative	Number of bottles required per analysis	Total # Bottles Site 38
In-House							
		Gamma Spec	water	??		1	
A		Gamma Spec	soil	Marinelli		1	
B		TAL Metals	soil	4 oz		1	
C		TAL Metals	water	4 oz		1	
D		Explosives	soil	4 oz		1	
E		Explosives	Water	4 oz		1	
F		VOC	soil	4 oz		1	
G		VOC	water	40 ml		3	
Off-Site							
H		Gamma Spec	soil	??		1	
I		Gamma Spec	water	Marinelli	HNO3	1	
J		TAL Metals	soil	500 ml		1	
K		TAL Metals	water	500 ml poly	HNO3	1	
L		Explosive	soil	500 ml		1	
M		Explosive	water	1 L Amber glass		1	
N		VOC	soil	4 oz		1	
O		VOC	water	40 ml		3	
P		SVOC	soil	500 ml glass		1	
Q		SVOC	water	1 L Amber		2	
R		TPH	soil	250 ml wide mouth glass		1	6
S		TPH	water	1- liter amber		2	2
		PCB	soil	????		1	
		PCB	water	?????		1	

Statement of Basis
Approval of No Further Action

January 2000

ER Site 38
Operable Unit 1335
Round 4

RSI Originally Submitted November 1998

Site-Specific Comments

OU 1335

Site 38, Oil Spills (Building 9920)

62. Pending submittal of a closure letter from the NMED Underground Storage Tank Bureau, ER Site 38 may be appropriate for NFA petition.

Response: According to our information, the NMED Underground Storage Tank Bureau does not regulate underground storage tanks used for heating oil (Attachment A). Therefore, we will not be able to obtain a closure letter from the NMED Underground Storage Tank Bureau. Also, as discussed in the NFA proposal for ER Site 38, confirmatory sampling and analysis of the backfill and soils below the former location of the tank indicate no total petroleum hydrocarbons contamination above the method detection limit and that the contaminants pose an acceptable level of risk under current and projected future land use.

Attachment A

ATTACHMENT A

NMED MEMORANDUM TO
UNDERGROUND STORAGE TANK BUREAU STAFF
NOVEMBER 29, 1993

STATE OF NEW MEXICO
ENVIRONMENT DEPARTMENT

MEMORANDUM

TO: Underground Storage Tank Bureau Staff

FROM: James Bearzi, Chief BRZ
Underground Storage Tank Bureau

SUBJECT: HEATING OIL TANKS

DATE: November 9, 1993

The New Mexico Underground Storage Tank Regulations (102.CCC) regarding heating oil tanks is inconsistent with the parallel Federal Regulations 40 CFR 280.12 (1990).

The New Mexico Hazardous Waste Act states that the State must adopt regulations concerning underground storage tanks that are regulated to but no more stringent than federal regulations.

The Federal Regulation Section 280.12 defines a UST not to include any tank used for storing heating oil for consumptive use on the premises where stored.

The policy of the UST Bureau will be to adopt the federal definition of UST and to cease regulating any UST for storing heating oil for consumptive use on the premises where stored.

This policy will make the Bureau enforcement consistent with the Federal Regulations.