

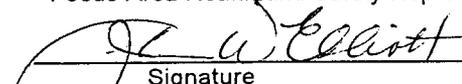
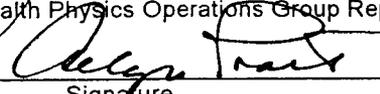
62112

# LANL ER PROJECT SITE-SPECIFIC HEALTH AND SAFETY PLAN (SSHASP)

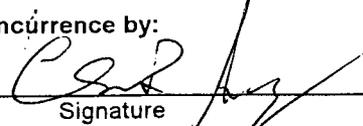
Project Title: Core Hole 2 Abandonment at Material Disposal Area (MDA) AB  
TA: 49

This plan addresses the health and safety (HS) criteria to be followed during investigation, remediation or decommissioning activities associated with the Environmental Restoration (ER) Project at the Los Alamos National Laboratory (LANL)

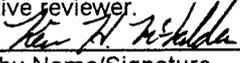
Reviewed and Approved by:

	Trung Nguyen	LANL	7/15/98
Signature	Name	Company	Date
Focus Area Health and Safety Representative (ESH-5)			
	John Elliott	LANL	7/15/98
Signature	Name	Company	Date
Health Physics Operations Group Representative (ESH-1)			
	Allyn Pratt	LANL	7/20/98
Signature	Name	Company	Date
Focus Area Leader			
	Leo Maes	LANL	7/23/98
Signature	Name	Company	Date
TA-49 Facility Coordinator			
	John DeJoia	MK/PMC	7-15-98
Signature	Name	Company	Date
Field Team Leader			

Concurrence by:

	Clark Judy	MK/PMC	7-15-98
Signature	Name	Company	Date
Subcontractor Management or HS Representative			
	Stanley Johnson	SBDP	7-17-98
Signature	Name/Title	Company	Date
Subcontractor Management or HS Representative			

The comments of the above reviewers have been incorporated as stipulated, or resolved with written record and copy to the respective reviewer.

Ken H. McFadden/ 	MK/PMC	7-15-98	M327	662-3700
Plan Prepared by Name/Signature	Group	Date	Mail stop	Phone



**PRE-JOB START HEALTH & SAFETY BRIEFING /  
HASP & SSHASP ACKNOWLEDGMENT FORM**

Title: Core hole 2 Abandonment AT MDA AB Date: 7-22-98  
TA 49 SSHASP No.: 212

Approved by:  
Ken H. McFadden SSO EMSR 115392  
 Name Title Employer or LANL Group Z Number  
Ken H. McFadden 7-22-98  
 Signature Date

I acknowledge that I understand the ER Project HASP requirements to this fieldwork and have read or been briefed on the contents of this SSHASP in accordance with requirements of Sections 1.2.2 and 10.1.1 of the ER Project HASP.

NAME	EMPLOYER/GROUP	Z NUMBER	SIGNATURE/DATE
Johnny H. Salazar	LANL/EES-15	099860	<u>Johnny H. Salazar</u> 7/22/98
DELEO MARTINEZ	LANL/EES-15	078913	<u>Deleo Martinez</u> 7/22/98
Douglas Pippin	LANL/EES-15	073877	<u>Douglas Pippin</u> 7/22/98
TRACY G. Schofield	LANL/EES-15	083566	<u>Tracy G. Schofield</u> 7/22/98
Charlene Tijillo	LANL/ESH-1	107706	<u>Charlene Tijillo</u> 7/22/98
Pauline Rodriguez	LANL/ESH-1	099333	<u>Pauline Rodriguez</u> 7-22-98
FRANCY IVARRA	LANL/ESH-5	116105	<u>Francy Ivarra</u> 7/22/98
John DeJoa	MK	117763	<u>John DeJoa</u> 7-29-98
DAVID WYKOS	SEN	117322	<u>David Wykos</u> 7/17/98
John C Brunson	Stewart Bros	152519	<u>John C Brunson</u>
Tom Castillo	Stewart Bros	152518	<u>Tom Castillo</u>
Stanley Schmor	SBDC/EES-4	114841	<u>Stanley Schmor</u> 7-17-98
Rene Evans	RMRS	114341	<u>Rene Evans</u> 8/17/98

8-667-897/699-405  
 72050/699-2054  
 -667-3358/699-4890  
 667-3162/699-1  
 cellular 690-0724  
 pager 104-6650  
 (W) 667-7905  
 667-1759  
 4-6555

## TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 Introduction .....	1
2.0 Background Information .....	1
Table 2-1 Site Description(s) .....	2
Table 2-2 Scope of Work .....	3
3.0 Organization, Responsibilities and Authority .....	5
4.0 Hazard Analysis .....	6
Table 4-1 Personnel by Task .....	6
Table 4-2 Hazardous Substances of Occupational Health Concern .....	7
Table 4-3 Hazard Assessment and Administrative and Engineering (A&E) Controls .....	8
5.0 Site Controls .....	13
6.0 Exposure Monitoring and Corresponding Actions .....	14
6.1 Direct-Reading Monitoring .....	14
6.2 Personal Dosimetry .....	16
6.3 Area Sampling .....	17
7.0 Personal Protective Equipment .....	17
8.0 Decontamination .....	18
9.0 Emergency/Incident Action Plan .....	19
10.0 Training .....	21
11.0 Medical Surveillance .....	23
12.0 Quality Control and Quality Assurance (QC/QA) .....	24
13.0 Record keeping .....	24

## APPENDICES

A Map(s) of Site Locations and Adjacent Facilities .....	25
B Hazardous Substance - Hazard Assessment .....	28
C On-site Chemical, Physical, and Toxicological References .....	33
D Emergency Contacts and Route(s) to Medical Services .....	34

## LIST OF ACRONYMS and ABBREVIATIONS

ACGIH .....	American Conference of Governmental Industrial Hygienists
ALARA .....	As Low As Reasonably Achievable
AL .....	Action Level
ANSI .....	American National Standard Institute
AR .....	Administrative Requirement
ATM .....	Atmosphere
CFR .....	Code of Federal Regulations
CP .....	Competent Person
CPR .....	Cardiopulmonary Resuscitation
CRZ .....	Contamination Reduction Zone
dBA .....	Decibels (A-Weighted Scale)
DOE .....	U.S. Department of Energy
DOT .....	U.S. Department of Transportation
EPA .....	U.S. Environmental Protection Agency
ER .....	Environmental Restoration
ESH .....	Environmental, Safety and Health
ESH-1 .....	Health Physics Operations Group
ESH-2 .....	Occupational Medicine Group
ESH-5 .....	Industrial Hygiene and Safety Group
ESH-12 .....	Policy and Program Analysis Group
EZ .....	Exclusion Zone
°F .....	Degrees Fahrenheit
GET .....	General Employee Training
HASP .....	Health and Safety Plan

**LIST OF ACRONYMS and ABBREVIATIONS (Cont'd)**

HAZWOPER .....	Hazardous Waste Operations
HPT .....	Health Protection Technician
HS .....	Health and Safety
LAMC .....	Los Alamos Medical Center
LANL .....	Los Alamos National Laboratory
LP .....	Laboratory Procedure
MDA .....	Material Disposal Area
mg/kg .....	Milligrams Per Kilogram
mg/m <sup>3</sup> .....	Milligrams Per Cubic Meter
mm .....	Millimeters
MSDS .....	Material Safety Data Sheet
NIOSH .....	National Institute for Occupational Safety and Health
NRR .....	Noise Reduction Rating
OSHA .....	Occupational Safety and Health Administration
PEL .....	Permissible Exposure Limit
PF .....	Protection Factor
PPE .....	Personal Protective Equipment
PRS .....	Potential Release Site
RCT .....	Radiological Control Technician
RSP .....	Radiological Screening Personnel
RWP .....	Radiological Work Permit
SLM .....	Sound Level Meter
SOP .....	Standard Operating Procedure
SSHASP .....	Site-Specific Health and Safety Plan
SSO .....	Site Safety Officer
SUP .....	Supervisor
SWP .....	Special Work Permit
SZ .....	Support Zone
TA .....	Technical Area
TLD .....	Thermoluminescent Dosimeter
TLV .....	Threshold Limit Value
TWA .....	8-Hour Time-Weighted Average

## 1.0 INTRODUCTION

This Site-Specific Health and Safety Plan (SSHASP) has been developed for the activities associated with the Abandonment of Core Hole 2 at MDA AB. The provisions specified in this SSHASP shall comply with applicable federal and state occupational health and safety (HS) requirements, including those of the U.S. Department of Energy (DOE). The DOE requires LANL to comply with the federal Occupational Safety and Health Administration (OSHA) requirements, although operations at LANL are not subject to the jurisdiction of OSHA. On March 24, 1995, the ER Project developed a Project Health and Safety Plan, herein referred to as HASP, which establishes HS information and requirements applicable to ER field operations project wide. In addition to the HASP, this SSHASP establishes site-specific HS information and requirements applicable to the scope of work described in Section 2.

ER participants are responsible for conducting work in accordance with applicable regulations. The term "ER participants" refers to anyone performing ER work, including LANL, subcontractors to LANL and their lower-tier contractors, consultants, and agents. In some cases in this document, LANL has chosen to invoke OSHA and LANL requirements which ordinarily may not apply to ER field operations (e.g., OSHA's general industry standards in Part 1910 of Title 29 of the Code of Federal Regulations [29 CFR 1910]). These choices were made on a case-by-case basis to maintain consistency with LANL's ALARA policy and to clarify LANL's expectations with regard to interpretable requirements of the multiple agencies governing ER work. Where there is concern that implementation of work orders or HS requirements would conflict with contract terms, or could unreasonably compromise the safety or health of an individual or the environment, such concerns should be brought to the attention of the Contract Administrator and the Field Unit HS Representative immediately. Failure to comply with terms of HS plans may constitute cause to stop activity or for issuance of a stop work order as specified in Section 3.4.2 of the HASP without cost or penalty to LANL.

This SSHASP shall be reviewed and approved in accordance with Section 1.2 of the HASP. Once this SSHASP has been approved, revisions will be tracked using a SSHASP modification form (Appendix B of the HASP) per Section 1.3 of the HASP. Modifications to this SSHASP may require a change to the terms or scope of a subcontract. Completion of a SSHASP modification form is not the means for modifying the scope or terms of the project contract. To modify a contract, the Subcontractor shall notify the Contract Administrator and Field Unit HS Representative under the changes clause and shall not proceed with the change until a change order has been mutually agreed between the parties, or unless unilateral direction is given by the Contract Administrator.

## 2.0 BACKGROUND INFORMATION

Between 1959 and 1961, MDA AB was used for underground experiments related to the safety of nuclear weapons. Based on available records, LANL conducted 35 underground experiments at TA-49 that involved the detonation of experimental devices in 3 ft to 6 ft diameter shafts at depths from 31 to 108 ft. Materials used in the experiments consisted of High Explosives (HE), Uranium-235 (U235), Uranium-238 (U238), Plutonium (P), Beryllium (Be), and Lead (Pb). Since these experiments ceased in August of 1961, TA-49 has been periodically used for a variety of other uses that have not resulted in significant additional contamination. Portions of TA-49 are currently being used for microwave research, LANL hazardous devices team activities and other low impact uses.

<b>Project Title:</b>	Core Hole 2 Abandonment at MDA AB
<b>TA:</b>	49
<b>Objective:</b>	Core hole 2 casing removal and sealing
<b>Classification of Work</b>	HAZWOPER

TABLE 2-1 SITE DESCRIPTION	
This table identifies the characteristics and potential contaminants of concern (PCOC) for TA-49, MDA AB	
DESCRIPTOR	CHARACTERISTICS
<b>Adjacent Facilities/Structures/Utilities/Topography</b>	
Roads/ Highways	TA-49 is located near the southern boundary of the laboratory. The main road off of State Route 4 into TA-49 makes a loop around MDA AB and also serves as the site fire break. No activities associated with this work will impact access to TA-49 facilities.
Buildings	There are four structures to the east of MDA AB. These structures are not currently occupied and therefore, should not be impacted by the BMP/S activities.
Below Ground Utilities:	All below ground utilities (i.e., electric, cable, gas, phone, water, sewer, etc.) will be identified, prior to start of work, in the LANL excavation permit.
Overhead Util.	There are no above ground utilities that will impact this work.
Topography	MDA AB is located on Frijoles Mesa in the southwest corner of LANL. The mesa is relatively flat and is bordered by two steep-walled canyons, Ancho and Water, that flow to the southeast.
<b>Pathways of Uncontrolled Release Dispersion</b>	
Land	If contaminants were inadvertently released to the ground, the most likely direction of dispersion would be to the southeast.
Air	Site operations will cease if high winds pose a dust dispersion threat of site contaminants, at the discretion of the SSO. Prevailing daytime surface winds at LANL are out of the south, southeast.
Water	There are no flowing waterways in the vicinity of MDA AB. However, heavy precipitation or runoff could disperse contaminants to the southeast.
<b>Emergency Accessibility</b>	
Land/Air	The site is accessible by land and air.
Water	The site is not accessible by water.
<b>Previous Substances Used, Disposed, Detected or Suspected at MDA AB</b>	
High Explosives Uranium Plutonium Americium Tritium Metals (See Appendix B for Specific Types)	Several sources have provided information concerning the potential contaminants at MDA-AB. Historical documents state that the shafts at MDA-AB contain 40 Kg of plutonium, 260 Kg of Uranium, 11 Kg of Beryllium, and an estimated 90,000 Kg of lead. Results of 1987 study of soil and vegetation immediately adjacent to MDA AB showed 53 pCi/g of americium-241 all other readings away from the asphalt pad were at or slightly above regional background levels. In two 1991 studies, 135 to 1200 pCi/g gross alpha, 38 pCi/g americium-241, 24 pCi/g plutonium-238, and 43 pCi/g plutonium-239 were found at the gopher burrows (See site map, Appendix A). In 1993, 291 pCi/g of plutonium-239, 5.1 pCi/g of plutonium-238, and 59 pCi/g of americium-241 were detected at a depth of 3 to 3.5 feet below the asphalt pad. The data from the 1998 sampling effort at MDA-AB is presented in Appendix B of this SSHASP. High Explosives (HE) data is not available.

TABLE 2-2 SCOPE OF WORK		
This table describes the tasks involved with Core hole 2 abandonment.		
Task ID	Task Description	Duration
<b>Task 1 Site Set Up</b>	This task will involve site set up activities such as removing the existing transducer and surface equipment from core hole 2, setting up the drill rig for pulling the casing, setting up the exclusion, contamination reduction and support zones, and the frisking, decontamination and hand and face wash areas. The demarcated zones and areas will be established prior to starting the abandonment activities. This task should not involve intrusive activities within the exclusion zone.	<b>July 1998</b>
<b>Task 2 Core Hole Abandonment</b>	This activity will utilize a drill rig to pull the casing out of core hole 2. As the casing is being pulled, bentonite, concrete or other suitable material will be used to backfill the hole. In addition, a core hole near area 5 will also be plugged with bentonite, concrete or other suitable material. Appropriate sampling/screening (Task 3), exposure monitoring (Task 4), dust suppression (Task 5), decontamination (Task 6), and waste management (Task 7) shall also be conducted during this task.	

**TABLE 2-2 (Cont'd)  
SCOPE OF WORK**

This table describes the tasks involved with Core hole 2 abandonment.

Task ID	Task Description	Duration
<b>Task 3 Sampling/ Screening</b>	A vapor sample for tritium may be collected from core hole 2 and a moisture logging may be conducted in core holes 1-4, holes 49-2906 and 2907, TH-holes 1-5 and moisture monitoring holes 2A-O, 2A-Y and 2B-Y. To collect the vapor sample, tygon tubing will be lowered into the core hole and an air sample will be drawn into a cold trap using a small air pump. Dry ice may be used to keep the trap cold. LANL personnel using a neutron source in accordance with established LANL procedures will conduct the moisture logging. Prior to the neutron logging, the water level in each hole will be determined using a sounder and if necessary, a water sample may be collected. In addition, the soils, casing, or any other potentially contaminated items will be sampled/screened for radiation, HE or other contaminants as required for release and/or waste characterization. This may involve the use of hand held detectors, smear analysis or collection of soil samples for HE spot test kit analysis or off-site analysis. As required, this task shall be performed in conjunction with tasks 2, 7 and 8.	<b>July 1998</b>
<b>Task 4 Exposure Monitoring</b>	Use of real-time and integrated monitoring equipment, as necessary, to screen for employee exposures to radiological, and physical hazards. As required, this task shall be performed in conjunction with tasks 2, 7 and 8.	
<b>Task 5 Dust Sup.</b>	Use of water spraying to reduce the level of airborne dusts if the action level in Section 6 of this SSHASP is exceeded. This may involve the use of a water truck or tank with adequate nozzle for misting. As required, this task shall be performed in conjunction with task 2.	
<b>Task 6 Equip./ Personnel Decon</b>	Equipment decontamination may involve the use of damp brush removal and/or pressurized water cleaning. Decontamination fluids shall be collected and managed as directed by the waste management coordinator. Personnel Decontamination may involve the use of Non-phosphate soap (Alconox), or other suitable soap, and water solution and scrub brushes. At a minimum, boots and gloves shall be decontaminated prior to exiting controlled areas as required. An appropriate decontamination area will be set up for doffing of disposable PPE and hand and face wash as specified in Section 8 of this SSHASP. As required, this task shall be performed in conjunction with tasks 2, 7 and 8.	
<b>Task 7 On-Site Waste Mgt.</b>	The waste management coordinator shall supervise all onsite waste management activities. All waste containers shall be properly labeled and stored, transported and disposed of in accordance with applicable waste management documents. Appropriate sampling/screening (Task 3), exposure monitoring (Task 4), and decontamination (Task 6) shall also be conducted during this task. As required, this task shall be performed in conjunction with task 2 and 8.	
<b>Task 8 Equipment Maintenance</b>	This task may involve the use of fuels, compressed/flammable gases, hydraulic fluids, etc., as needed to maintain and/or repair equipment. In general, the subcontractor will be asked to perform all maintenance/repair tasks off-site when possible. However, when such task must be performed on-site, all required special work permits will be obtained prior to starting the activity. MSDSs for all chemicals brought on-site will be provided to the SSO, for review, prior to their use. Outside storage of flammable materials shall be in accordance with 29 CFR 1926.152 (c). Flammable liquids in excess of 25 gallons, in a building or structure, shall be stored in an approved metal storage cabinet. Appropriate sampling/screening (Task 3), exposure monitoring (Task 4), and decontamination (Task 6) shall also be conducted during this task.	
<b>Task 9 Incident Response</b>	Response to an incident (i.e., rendering first-aid/CPR, hazardous substance release, fire, and spill containment) tasks will be performed in accordance with Sections 7, 9 and 10 of the HASP, Section 9 this SSHASP, and the Site Spill Prevention, Control, & Countermeasures Plan.	

### 3.0 ORGANIZATION, RESPONSIBILITIES and AUTHORITY

Definition of HS roles, responsibilities, authorities, and lines of communication for key personnel identified below are defined in Section 3 of the HASP.

TABLE 3 KEY PERSONNEL HAVING HS RESPONSIBILITY			
Title	Name	Organization	Phone/Pager
<b>Facility Contacts</b>			
Facility Coordinator	Leo Maes	LANL	667-9462
Facility Manager	Ron Brodd	LANL	667-2272
<b>Field Project Management</b>			
Focus Area Leader	Allyn Pratt	LANL	667-4308
<b>Field Team</b>			
FTL	John DeJoia	MK/PMC	662-1359
SSO/RCT	John Hayes	MK/PMC	662-7300
<b>Support Personnel</b>			
Focus Area Health and Safety Rep.(ESH-5)	Trung Nguyen	LANL	667-7905/104-6650
ESH-1 Representative	Clarita Trujillo	LANL	667-3999/104-6663
<b>Alternate Personnel</b>			
FTL	John Crocker	MK/PMC	662-1319
FTL	Ken McFadden	MK/PMC	662-1302
SSO/RSP	Clint Daymon	MK/PMC	662-1326
SSO/RSP	Ken McFadden	MK/PMC	662-1302
SSO/HPT	Ray Wright	MK/PMC	662-1325
SSO	Hoss Patillo	MK/PMC	662-1344

### 4.0 HAZARD ANALYSIS

Provided in this section are the task-specific hazard analysis information and requirements in accordance with Section 4 of the HASP.

### 4.1 PROJECT PERSONNEL

The personnel identified below by role are expected to perform the task(s) indicated.

TABLE 4-1 PROJECT PERSONNEL BY TASK										
This table identifies the personnel by role, which are expected to perform the task(s) indicated. The tasks are as follows: Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.										
PERSONNEL ROLE	TASK(s)									
	1	2	3	4	5	6	7	8	9	
FTL	X	X	X		X	X	X		X	
SSO	X	X	X	X	X	X	X	X	X	
RCT/HPT/RSP	X	X	X	X	X	X	X	X	X	
Drill Rig Operator	X	X			X	X	X	X		
Drill Rig Helper(s)	X	X			X	X	X	X		
Samplers		X	X			X				
On site Waste Mgt. Coordinator							X			

## 4.2 HAZARDOUS SUBSTANCES OF OCCUPATIONAL HEALTH CONCERN

Not all chemical products used to accomplish a task or contaminants at a particular site may pose an occupational health threat. The hazardous substances of occupational health concern are identified in this section by task and by class of substance, in accordance with Section 4.1 of the HASP. Results of a health hazard assessment of each chemical product and site contaminant identified in Table 2-1 and associated rationales are provided in Appendix B. Substances that have a hazard assessment resulting in either "possibly could occur", "probably will occur", or "likely to occur" and which are expected to result in injury or illness having a hazard severity of "minor", "major", or "catastrophic" are considered to pose an occupational health threat to personnel who may be exposed to these substances, and are included in Table 4-2. The key to the hazard assessment ratings is provided in Appendix C of the ER HASP. For each class of substances included in Table 4-2, the most hazardous substance is identified in Table 4-3 together with corresponding administrative and engineering controls.

<b>TABLE 4-2 HAZARDOUS SUBSTANCES OF OCCUPATIONAL HEALTH CONCERN</b>										
This table identifies those hazardous chemical products and groups of site contaminants that are considered to pose an occupational health threat to personnel who may be exposed to these products and contaminants while performing the indicated tasks. The hazardous substances identified in this table were included based on the results of the health hazard assessment found in Appendix B. The tasks are as follows: Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions. (MI = Minor, MO = Moderate, N = Negligible)										
<b>Hazardous Chemical Products to be Used During Field Operations</b>										
The chemical products listed below are likely to be used for the tasks indicated, on site or at satellite locations where field support operations occur. MSDSs for each product shall be kept readily available to users of these products, and shall be shared with other employer's employees on site who may be affected by the hazardous products in accordance with 29 CFR 1926.65(b)(1)(iv) and (v) and 1926.65(i) and Section 4.2.2.3 of the HASP. It is LANL's policy that whenever feasible a less toxic product should be substituted for a more toxic product, especially for products having a carcinogen constituent.										
Product/Contaminant	TASK(s)									
	1	2	3	4	5	6	7	8	9	
<b>HAZARDOUS SUBSTANCE</b>										
<b>Compressed Gas</b>										
Acetylene (cutting)	N	N	N	N	N	N	N	MI	N	
Oxygen (cutting)	N	N	N	N	N	N	N	MI	N	
<b>Fuels/Lubricants</b>										
Diesel	N	N	N	N	N	N	N	MI	N	
Gasoline	N	N	N	N	N	N	N	MI	N	
Oil/Hydraulic Fluid	N	N	N	N	N	N	N	MI	N	
<b>Other</b>										
Bentonite/Concrete	N	MI	N	N	N	N	N	N	N	
Neutron Source	N	N	MI	N	N	N	N	N	N	
Dry Ice	N	N	MI	N	N	N	N	N	N	
<b>SITE CONTAMINANTS</b>										
<b>HE</b>	N	N	N	N	N	N	N	N	N	
<b>Radionuclides</b> (U235, U238, Pu239, Am241, H3)	N	MO	MI							
<b>Metals</b> (See Appendix B for specific types)	N	N	N	N	N	N	N	N	N	

#### 4.3 HAZARD ASSESSMENT AND ADMINISTRATIVE AND ENGINEERING CONTROLS

Hazards included in this section are those that could pose an occupational health threat to workers performing the associated task(s). The hazard assessments and rationales are indicated below with the corresponding administrative and engineering controls for protection from and mitigation of the hazards.

<b>TABLE 4-3 HAZARD ASSESSMENT and ADMINISTRATIVE and ENGINEERING (A&amp;E) CONTROLS</b>			
This table identifies those hazardous substances (chemical products, groups of site contaminants), and safety, biological and physical hazards that are considered to pose an occupational health threat to personnel who may be exposed to these products, contaminants and hazards while performing the indicated tasks. The hazardous substances identified in this table were included based on the results of the health hazard assessment found in Appendix B. The tasks are as follows: Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.			
Hazard	Task(s)	Hazard Assessment/Rationale	Administrative & Engineering (A&E) Controls (Prevention/Mitigation Measures)
<b>HAZARDOUS SUBSTANCES</b>			
<b>Chemical Products</b>			
<b>Compressed Gases</b>  Acetylene Oxygen Gases	8	<b>Negligible to Minor/</b>  Exposures to compressed gases is possible although unlikely  Fire could result, but is very unlikely to occur, possibly resulting in reversible injuries or even death	Compliance with 29 CFR 1926 Subpart F. Emergency equipment specified in Section 9 shall be maintained on site ready for use and readily accessible. Compliance with 29 CFR 1926 Subpart J, Special Work Permit, and LANL AR 8-4 during all cutting and welding operations. In addition, the type of material that is cut/welded and the duration of cutting/welding shall be taken into account to determine the hazard potential from exposure to cutting/welding fumes.
Fuels	8	<b>Negligible to Minor/</b> Exposures to fuels is possible Flammable liquid hazards always present	Compliance with 29 CFR 1926.152. Emergency equipment specified in Section 9 shall be maintained on site ready for use and readily accessible.
Bentonite/ Concrete	2	<b>Negligible to Minor/</b> Exposures to these materials is possible but unlikely at levels that would cause illness	Bentonite/concrete will be poured down the core hole slowly to generate the lowest level of airborne particulates as possible.
Neutron Source	3	<b>Negligible to Minor/</b> Exposures to Neutron Source is possible but unlikely at levels that would cause illness	An RWP will be developed and followed during the Moisture logging activity. Manufacturer recommendations and applicable federal regulations shall be followed to reduce the risk of exposure.
Dry Ice	3	<b>Negligible to Minor/</b> Exposures to Dry Ice is possible but unlikely at levels that would cause serious injury	Avoid exposure to unprotected skin. Wear PPE specified in section 7 of this SSHASP.
<b>Site Contaminants</b>			
Airborne Dusts (Rad)	2,3,4	<b>Negligible to Moderate/</b> Exposures to airborne dusts containing radiological contamination is possible	Dust suppression will be performed to keep visible dust down to a minimum using a water spraying/-misting. An RCT/HPT/RSP will perform periodic radiological frisking of equipment and materials as directed by ESH-1. Radiological releases will be performed as required by ESH-1.

<b>TABLE 4-3 (Cont'd)</b>			
<b>HAZARD ASSESSMENT and ADMINISTRATIVE and ENGINEERING (A&amp;E) CONTROLS</b>			
Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response.			
<b>SAFETY HAZARDS</b>			
<b>Slips, Trips and Falls</b>			
Slips, trips, falls from uneven terrain	ALL	<b>Minor/</b> Hazard severity is minor and although unlikely to occur, possibly could occur	Use good housekeeping on-site and minimize threat of slick surfaces. If necessary, tripping hazards will be marked to make them more visible.
Falls from heights 6 feet or higher	2, 8	<b>Minor to Moderate/</b> Hazard severity could be moderate and although unlikely to occur, possibly could occur	If there is a need to work 6 feet or more above the derrick floor or other working surface then compliance with 29 CFR 1926 Subpart M, and as necessary, use of PPE specified in Section 7 of this SSHASP for fall protection shall be required.
<b>Tools</b>			
Hand tools	2, 6, 8	<b>Negligible to Minor/</b> Injury possible but unlikely to be life threatening	All tools shall be inspected for proper working condition prior to use. All defective tools will be removed from the site or tagged "Do Not Use". All electrical tools shall have the grounding plug intact unless the tool is double insulated.
<b>Drill Rig Operation</b>			
Underground utilities	2	<b>Minor to Serious/</b> Hazard severity could be catastrophic and although unlikely to occur, possibly could occur	See Below
<ul style="list-style-type: none"> <li>• <u>EXCAVATION PERMIT REQUIRED</u> for removing or assessing soils at depth <math>\geq</math> 6 inches; A&amp;E controls shall be implemented in accordance with applicable LANL excavation permit (per LANL AR 1-12) and as specified below; contact Field Unit HS Representative to initiate permit process.</li> <li>• Estimated locations of utilities (i.e., sewer, telephone, gas, electric, water lines, etc.) shall be determined prior to drilling. Notify utility owners of intended work and request they demarcate on ground surface location(s) of underground utilities; have a field team member accompany utility owner rep. to identify intended drilling location(s) and to find out specifics of utility location(s).</li> <li>• If utility owner cannot establish exact location of utility installation(s), drilling may proceed with caution and provided detection equipment or other acceptable means to locate utility installation(s) are used.</li> <li>• As drilling operations approach estimated location of underground utility, exact location of the installation shall be determined by safe and acceptable means (i.e., using hand held excavating equipment).</li> </ul>			
Pressure hazards	2	<b>Moderate/</b> Hazard severity likely to be irreversible injury and possibly could occur	Pressure-hose connections shall be secured with safety chains or clamped to prevent whipping in the event of a break.
Lightning	2	<b>Moderate/Serious</b> Although unlikely to occur, lightning is a legitimate concern that could result in serious injury or death	Seek shelter away from the drill rig. Support trailers or site vehicles will be the muster areas during electrical storms. Refer to Table 1 of the HASP for additional A&E controls.
Pinch points	2	<b>Moderate/</b> Hazard severity likely to be irreversible injury and possibly could occur	The drill rig shall be inspected for engineering controls in compliance with applicable sections of Subpart O of 29 CFR 1926 and 1910

<b>TABLE 4-3 (Cont'd)</b>			
<b>HAZARD ASSESSMENT and ADMINISTRATIVE and ENGINEERING (A&amp;E) CONTROLS</b>			
Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response.			
Hazard	Task(s)	Hazard Assessment/ Rationale	Administrative & Engineering (A&E) Controls (Prevention/Mitigation Measures)
<b>SAFETY HAZARDS (Cont'd)</b>			
<b>Drill Rig Operation (Cont'd)</b>			
Mechanical hazards	2	<b>Moderate to Serious/</b> Hazard severity likely to be irreversible injury and possibly could occur	See below
<ul style="list-style-type: none"> <li>• Per DOE (Drilling Safety Manual, 1983 and Construction Safety Reference Guide, 1993), drill rigs shall be designed, manufactured, erected, used, and maintained in accordance with appropriate American Petroleum Institute (API) Specifications and Recommended Practices, as a minimum, and with applicable sections of 29 CFR 1926.251, Subpart N of 29 CFR 1926, and Title 8 of the California Administrative Code.</li> <li>• Hoist, hooks, wires, ropes, slings, and rigging accessories shall be designed, installed, operated, inspected, and tested in accordance with applicable requirements of the DOE Hoisting and Rigging Manual (April 1993, DOE/ID-10500), and with applicable sections of 29 CFR 1926.251 and Subpart N of 29 CFR 1926. These accessories shall be inspected at the beginning of each shift in which they are to be used and as necessary during use to ensure safety.</li> <li>• Rig and mast shall be inspected at least weekly.</li> <li>• Hoist lines shall be inspected visually each day and thoroughly at minimum of 30 day intervals.</li> <li>• Guy wires in use shall be thoroughly inspected at least once a year.</li> <li>• There shall be no apparent damage, excessive wear, or deformation of any part of the drilling equipment. A qualified person according to section 12.1 shall inspect equipment. Defective equipment shall be removed from service and any defects shall be corrected or repaired before reuse. Reduction of original strength shall be noted and taken into account for determining when equipment is taken out of service.</li> <li>• Each derrick or mast, and hoist shall be permanently marked with its rating capacity.</li> <li>• Drill rigs must be leveled, anchored, and guyed in accordance with manufacturer's recommendations or when there are none, with API Specifications 4E.</li> </ul>			
<b>Equipment Decontamination</b>			
Pressure washer operation – lacerations	6	<b>Moderate/</b> Hazard severity could be irreversible and although unlikely to occur, possibly could occur	Operator shall use PPE as specified in Section 7. At no time will the pressure water spray be pointed at anybody. A suitable protective barrier shall be installed over/around the decon area to prevent migration of spray.
<b>Vehicles Traffic</b>			
Vehicular Traffic	All	<b>Minor/</b> Hazard severity is minor and although unlikely to occur, possibly could occur	Field team members exposed to vehicle traffic shall be provided with and shall wear warning vests or other suitable garments made of reflectorized or highly visible materials.
<b>BIOLOGICAL HAZARDS</b>			
Refer to Table 1 of the HASP for information concerning various biological agents (i.e., insects, snakes, ticks, and spiders)			

<b>TABLE 4-3 (Cont'd)</b>			
<b>HAZARD ASSESSMENT and ADMINISTRATIVE and ENGINEERING (A&amp;E) CONTROLS</b>			
Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response.			
Hazard	Task(s)	Hazard Assessment/ Rationale	Administrative & Engineering (A&E) Controls (Prevention/Mitigation Measures)
<b>PHYSICAL HAZARDS</b>			
<b>Temperature Extremes</b>			
Heat Stress	ALL	<b>Minor to Serious/</b> Heat stress will be a concern. however, a life threatening condition is unlikely since the type and amount of physical labor on this project is minimal	Inform personnel of signs and symptoms of heat stress. SSO shall implement exposure monitoring and controls in accordance with Table 6-1 of this SSHASP. Implement work regime and fluid intake as necessary.
<b>Noise</b>			
Excessive Noise	2, 6, 8	<b>Minor to Serious/</b> Possibly or probably could occur resulting in irreversible injury	Whenever voice(s) must be raised to communicate between two or more persons located $\leq 3$ feet of each other, the noise level is likely exceeding the PEL; designate areas requiring hearing protection; conduct noise monitoring per Section 6 of this SSHASP and 29 CFR 1910.95. Also refer to Section 4.2.2.7 of HASP for additional requirements.
Refer to Table 1 of the HASP for additional physical hazards that apply to this job (i.e., altitude sickness, and sunburn)			

## 5.0 SITE CONTROLS

In accordance with Section 5 of the HASP, the required site control measures are specified below for each task or group of tasks having different requirements. Any exceptions or deviations from requirements of the HASP are noted below.

TABLE 5 SITE CONTROL MEASURES													
This table identifies the control measures to be implemented during the tasks specified. The tasks are as follows: Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.													
CONTROL MEASURES	TASK(S)												
	1	2	3	4	5	6	7	8	9				
Exclusion Zone		X	X	X	X	X							
Not applicable	X						X	X	X				
RCA		X	X	X	X	X							
The EZ shall be localized at MDA AB and shall be demarcated by cones, barrier tape, rope, fence, or other suitable materials. Posting(s): Per LANL LIR402-712-01, Subpart G of 29 CFR 1926, and Other Chemical-Specific Standard (Table 2 of the HASP).													
Contamination Reduction Zone		X	X	X	X	X							
Not applicable	X						X	X	X				
The CRZ shall be localized at MDA AB and shall be demarcated by cones, barrier tape, rope, fence, or other suitable materials. Posting(s): Per LANL LIR402-712-01, Subpart G of 29 CFR 1926, and Other Chemical-Specific Standard (Table 2 of the HASP).													
Support Zone (SZ)		X	X	X	X	X							
Not applicable	X						X	X	X				
The SZ shall be localized in a clean area near MDA AB and will not be demarcated.													
Decon Pad/Facility						X							
Not applicable	X	X	X	X	X		X	X	X				
RCA						X							
The decontamination facility shall be located near the CRZ and shall be demarcated by cones, barrier tape, rope, fence, or other suitable materials. Posting(s): Per LANL LIR402-712-01, Subpart G of 29 CFR 1926, and Other Chemical-Specific Standard (Table 2 of the HASP).													
Hand/Face Wash		X					X	X	X				
Not applicable	X		X	X	X	X							
Located on site in SZ and will not be demarcated. Shall be established per 29 CFR 1926.65													
Toilet Facility	A porta-john will be on site.												
Clothing Change Facility	If workers need a place to change, an area will be established to provide for privacy. If no privacy is necessary, PPE will be donned in the CRZ.												
Wind Direction Indicator(s)	Shall be located on site where readily visible to field team members.												

## 6.0 EXPOSURE MONITORING AND CORRESPONDING ACTIONS

In accordance with Section 6 of the HASP, personnel exposure monitoring requirements, action levels, and the corresponding actions to be taken are specified in the tables in this section (Tables 6-1, 6-2, and 6-3) for each task or group of tasks having different requirements.

### 6.1 DIRECT-READING INSTRUMENTS

Requirements for exposure monitoring using direct-reading instruments and the corresponding action levels and response actions are specified in Table 6-1 for each task or group of tasks having different requirements, action levels or responses. These requirements, levels, and actions are set in accordance with Section 6 of the HASP. Any exceptions or deviations from requirements of the HASP are noted where applicable.

TABLE 6-1 DIRECT-READING INSTRUMENT REQUIREMENTS					
The tasks are as follows: Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.					
Haz.Cond./Subst.	Task	Instrument/Procedure	Local & Freq. of Monitoring	Action Level(s)/Rationale	Response Action(s)
HEALTH PHYSICS					
Airborne dust containing Gross $\alpha$ , $\beta$ and $\gamma$ contam.	All	ESP-1 with HP-260 probe or equivalent  Ludlum 139 with air proportional probe or equivalent  Eberline RO-2/ LANL RadCon Manual and training and associated ESH-1 procedures and ER addendum's	Personnel: Prior to exiting the EZ/CRZ Equipment/Samples: Prior to decon.	Background (BKG)	RSP performs surveys. Intermittent ESH-1 coverage. $\alpha$ swipes counted using field $\alpha$ screening instrument; direct frisk for $\beta/\gamma$ . Workplace (RBA) will be released daily by smears counted on a Berthold or equivalent.
				>BKG but $\alpha < 500$ cpm/ probe area $\beta/\gamma < 5000$ cpm/ probe area Tritium $< 10,000$ dpm/100 cm <sup>2</sup> contamination $< 20$ uCi/m <sup>3</sup> soil gas levels. BZ levels at BKG. Any smearable contamination on equipment and any detectable contamination on personnel above MDA/ Standard level set by ESH-1	Notify ESH-1 of elevated readings. RSP performs surveys. Increased ESH-1 coverage. $\alpha$ Swipes counted using Ludlum 2000 tray counter or equivalent; direct frisk for $\beta/\gamma$ . Notify ESH-1 at once of any contamination found on skin or personal clothing.
				$\alpha > 500$ cpm/ probe area $\beta/\gamma > 5000$ cpm/ probe area Dose rate $> 5$ mR/hr	Work may only proceed according to approved RWP and with full-time on-site ESH-1 technician or equivalent.
The RWP issued for this project will identify the radiological action level(s) that if reached or exceeded would require us to stop work.					

TABLE 6-1 (Cont'd)					
DIRECT-READING INSTRUMENT REQUIREMENTS					
Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response.					
Haz. Cond. /Subs.	Task	Instrument/ Procedure	Local & Freq. of Monitoring	Action Level(s)/Rationale	Response Action(s)
PHYSICAL HEALTH HAZARDS(Cont'd)					
Heat Stress	ALL	Thermometer/ ER Project H&S Activities Manual/MK HS Plan	Refer to Table 1 of the HASP.		
Noise	2, 6, 8	Noise level meter/ ER Project H&S Activities Manual/MK HS Plan	Monitor hearing zone(s) when working near loud equipment	85 dBA/ OSHA 29 CFR 1910.95	See Below
≥ Action Level: Implement appropriate engineering control(s) per Table 4-3; if unable to lower noise levels below AL, demarcate/post zones of excessive noise and limit access to employees having sufficient hearing protection training, medical surveillance, and hearing protection per this SSHASP					

## 6.2 PERSONAL DOSIMETRY

Requirements for personal dosimetry and the corresponding action levels/response actions are specified below for each task or group of tasks having different requirements, action levels or responses. These requirements are set in accordance with Section 6 and Table 2 of the HASP. Any exceptions or deviations from requirements of the HASP are noted where applicable.

TABLE 6-2				
PERSONAL DOSIMETRY REQUIREMENTS				
The tasks are as follows: Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.				
Hazardous Condition	Task(s)	Instrument/Procedure	Action Level(s)/ Rationale	Response Action(s)
HEALTH PHYSICS				
External sources of Plutonium/Uranium	All Tasks performed within the boundary of MDA AB	Monthly TLD badge. Baseline and Termination Urinalysis and In Vivo	Potential to exceed 100 m REM/year dose limit/10 CFR 835	Follow response actions specified on the RWP.
PHYSICAL HEALTH HAZARDS				
Noise	2, 6, 8	Personal noise dosimeter(s)/ER Project H&S Activities Manual/MK HS Plan	Refer to Table 6-1	

**6.3 AREA SAMPLING**

Requirements for area sampling and the corresponding action levels and response actions are specified in Table 6-3 for each task or group of tasks having different requirements, action levels or responses. These requirements, levels, and actions are set in accordance with the contractor's IH Monitoring Program, and Section 6 of the HASP. Environmental sampling requirements, if any, to evaluate spread of contamination to off-site locations should be provided in a site-specific document separate from this SSHASP.

<b>TABLE 6-3 AREA SAMPLING REQUIREMENTS</b>	
Area monitoring for airborne particulates may be collected down wind of the operations and analyzed for radiological contaminants in accordance with applicable ESH-1 procedures.	

**7.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)**

In accordance with Section 7 of the HASP, PPE requirements are specified below for each task or group of tasks having different requirements. Only personnel who are trained and qualified to use the equipment in accordance with Section 7 and 10 of the HASP and Section 10 of the SSHASP are allowed to use the equipment specified. Any exceptions or deviations from requirements of these sections are noted below.

<b>TABLE 7 PERSONAL PROTECTIVE EQUIPMENT (PPE)</b>												
This table identifies the PPE to be used for each task or group of tasks having different requirements. The tasks are as follows: Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.												
PPE REQUIREMENTS	TASK(s)											
	1	2	3	4	5	6	7	8	9			
<b>HEAD</b>	(per 29 CFR 1910.135, ANSI Z89.1-1986, or Z89.2 for electrical shock protection)											
Hard Hat	Hard hats will be required for any activity conducted in the vicinity of the drill rig or any other piece of heavy equipment.											
<b>EYES</b>	(per 29 CFR 1926.103, ANSI Z87.1-1989)											
Safety Glasses (with side shields)	X	X	X	X	X	X	X	X	X			
Face Shield						X						
Face shield required if decontamination involves a pressure washer or any other method that involves splashing.												
<b>BODY</b>	At a minimum, long pants and shirts with at least 4" sleeves will be required.											
Poly coated Tyvek or Rain Suit						X						
Poly coated tyvek or rain suit if decontamination involves a pressure washer or any other method that involves splashing.												
<b>HANDS</b>	(per 29 CFR 1910.137 and 138, ASTM D 120-87)											
Inner (powder-free disposable Nitrile gloves or equivalent)		X	X	X	X	X	X	X	X			
Outer (Cotton or leather)		X	X	X	X		X		X			
Outer (.018" gauge Latex 12" length or equivalent)						X						
Latex outer gloves and taped sleeves if decontamination involves a pressure washer or any other method that involves splashing. Cuffs will be taped to sleeves.												

TABLE 7 (Cont'd)													
PERSONAL PROTECTIVE EQUIPMENT (PPE)													
Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response.													
PPE REQUIREMENTS	TASK(s)												
	1	2	3	4	5	6	7	8	9				
<b>FEET</b>	(per 29 CFR 1910.136, ANSI Z41-1991)												
Safety Toe Work Boots	X	X	X	X	X	X	X	X	X				
Chemical Resistant Work Boots or Covers over steel toe work boots		X	X	X	X	X	X	X					
Chemical resistant work boots or covers over steel toe work boots required if wet/muddy conditions are encountered													
<b>EARS</b>	Hearing protection use shall be required for performing tasks near the drill rig or any other piece of heavy equipment until a negative determination is made.												
Plugs NRR 31 dBA	Hearing protection (per 29 CFR 1910.95, ANSI Z87.1-1989, 29 CFR 1926.101) will be worn in accordance with Table 4-3 of this SSHASP. Hearing protection devices will be inspected by the SSO prior to use. Hearing protection will be required when working near any piece of heavy equipment until a negative determination is made.												
<b>WELDING/CUTTING</b>	Leather or Flame-Proof gloves, long sleeve shirt and welding goggles type 7,8, or 9 as specified in 29 CFR 1926.102 (a)(5) with a minimum lens shade of 3 as specified in 29 CFR 1926.102 (b)(1) shall be worn during all welding/cutting operations.												
<b>DRY ICE</b>	Leather or cold resistant gloves, long sleeve shirt												
<b>FALL PROTECTION</b>	Full body harness/life line (per 29 CFR 1926 Subpart E) shall be worn when ever an individual is exposed to a fall hazard of 6' or greater.												
<b>Note:</b> The RWP for this project may specify additional PPE.													

### 8.0 DECONTAMINATION

In accordance with Section 8 of the HASP, personnel and/or equipment decontamination requirements are specified below for each task or group of tasks having different requirements. Any exceptions or deviations from Section 8 of the HASP are noted below.

TABLE 8													
PERSONNEL AND EQUIPMENT DECONTAMINATION													
This table identifies the personnel and equipment decontamination to be used for each task or group of tasks having different requirements. The tasks are as follows: Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.													
DECON REQUIREMENTS	TASK(s)												
	1	2	3	4	5	6	7	8	9				
<b>Personnel and Environmental Monitoring Equipment (EME)</b>													
Option 1 - Standard Approach Level D or Option 2 - Standard Approach Level C will be required.													
Wash Soap	Alconox or equivalent					X							
Aqueous Rinse	Water					X							
Reusable PPE	Outer gloves, deconned PPE					X							
Disposable PPE	Inner gloves					X							
<b>Sampling Equipment</b>													
Wash Soap						X							
Aqueous Rinse						X							
DI Rinse						X							

TABLE 8 (Cont'd)												
PERSONNEL AND EQUIPMENT DECONTAMINATION												
Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response.												
DECON REQUIREMENTS	TASK(s)											
	1	2	3	4	5	6	7	8	9			
<b>Heavy Equipment/Casing</b>												
Gross Decon						X						
Pressure Washer						X						
<p>Modifications: Task 6 was specifically defined as Personnel/Equipment decontamination. In general, decontamination will be required for any activity occurring within the EZ. The option will be determined by the level of PPE required for the task(s) performed. Gross decontamination will occur within the EZ. Final decontamination will occur in the CRZ.</p> <p>Coveralls, boots, and decontaminated PPE will be reused. Waste minimization practices will be implemented when ever possible.</p>												

### 9.0 EMERGENCY/INCIDENT ACTION PLAN

Incident/emergency action requirements, equipment, and supplies are specified in Table 9. Response to an incident or emergency shall occur according to Section 9 of the HASP and any additional TA-49 requirements.

In the event of an incident or emergency, the FTL or SSO will function as the site emergency/incident coordinator, as necessary, and will arrange for immediate notification of LANL Emergency Response (EM&R) personnel to take control of the site and/or arrange for immediate notification of appropriate authorities. Other key on-site incident/emergency response personnel are identified below. Only personnel who are trained and certified in accordance with Sections 7, 9, and 10 of the HASP and SSHASP are allowed to respond and use the equipment specified. Incident/emergency contacts and telephone numbers and a map indicating the route to the nearest hospital and medical clinic are included in Appendix D. Both these items shall be posted on-site where readily accessible to field team personnel. A site-specific muster area shall be determined by the SSO each day prior to the start of field operations and shall be communicated to individuals on-site during the HS Tailgate Meeting and as other individuals arrive at the site.

Accident and Injury Reporting will be in accordance with Section 9 of the HASP and Section 15 of the ER Project Manual for Site Health & Safety Activities.

TABLE 9
INCIDENT/EMERGENCY ACTION REQUIREMENTS
This table identifies the first-aid/CPR providers, incident responders, and the equipment available on-site to respond to on-site incidents/emergencies for each task or group of tasks. The tasks are as follows: Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.
<b>Incident Responders: LANL EM&amp;R</b>
<b>First-Aid/CPR Provider(s): John Hayes, Ken McFadden, John DeJoia</b>
<b>Emergency Equipment On-Site: Fire extinguisher(s); First Aid Kit; Bloodborne Pathogens Kit; Eye Wash Station; Communication devices (i.e., cell phones, radios, air horn, etc.,) as available.</b>
The first aid equipment shall be kept in a weatherproof container and the contents shall be checked weekly and restocked by the SSO or designee. Contents shall meet the minimum requirements for Industrial First Aid Kits per ANSI Z308.1 - 1978.
The eyewash shall be located within 10 seconds travel time and not more than 100 feet of travel distance of any source of chemical splash that may be corrosive or moderately to severely irritating to the eyes. They shall have the capacity to be able to provide continuous flushing for the duration of time necessary to sufficiently flush the most hazardous substance for which the device is being specified. The eyewash shall be inspected monthly by the SSO or designee and shall be flushed in accordance with the manufacturers recommendations.

**TABLE 9 (Cont'd)  
INCIDENT/EMERGENCY ACTION REQUIREMENTS**

Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response.
At least one 10 lb (minimum) ABC fire extinguisher shall be conspicuously located and readily accessible for each spark/flame producing operation (i.e. cutting/welding operation, heavy equipment, etc.). A 20lb ABC fire extinguisher shall be located at refueling areas. All extinguishers shall be periodically inspected and maintained in operating condition.
Equipment leaks shall be picked up ASAP using a shovel and disposed of as directed by the on site waste coordinator. Equipment should be parked on poly sheeting overnight to capture leaking material. Equipment shall be repaired as feasible to reduce leaks.
Emergency escape routes will be discussed with the workers during the daily tailgate safety meetings. The route map to emergency services and the emergency phone list in Appendix D of this SSHASP shall be posted on site for easy reference. An air horn or a vehicle horn shall be used as the site emergency notification device. Two blasts of the horn will tell the crew to meet at the muster area. After the crew has assembled at the muster area, a head count (using daily tailgate forms, access control logs or TA-49 access log). After the crew has been accounted for, they shall either evacuate the area and report to the TA-49 access control building or wait at the site for further direction from TA-49 personnel or EM&R. Only the heavy equipment will be shutdown prior to evacuation.

**10.0 TRAINING**

Training requirements are specified below by job title for each task or group of tasks having different requirements. Personnel shall be trained in accordance with Section 10 of the HASP and as specified below. Any exceptions or deviations from requirements of the HASP are noted below. Personnel performing the roles indicated below shall have completed and have current documentation of the training specified. The SSO, or the FTL, shall verify that personnel have met the training requirements prior to authorizing individuals to enter controlled zones of the work site.

**TABLE 10  
TRAINING REQUIREMENTS**

This table identifies the training requirements for this project. The tasks are as follows: Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.  
FTL = Field Team Leader; SSO = Site Safety Officer; RCT = Radiological Control Technician; DRO = Drill Rig Operator, DRH = Drill Rig Helper; SAM = Sampler; WMC = Waste Management Coordinator  
R = Read training; C = Classroom training; F = Field training; AN = As needed per the HASP, or applicable regulatory requirement depending upon the intended duties of the personnel role; ER = Employer required

Training Requirement	Personnel Role								
	FTL	SSO	RCT	DRO	DRH	SAM	WMC		
HASP	F	F	F	F	F	F	F		
SSHASP	F	F	F	F	F	F	F		
Pre- Job Start HS Briefing	F	F	F	F	F	F	F		
Daily HS Tailgate Mtgs.	F	F	F	F	F	F	F		
GET	C	C	C	C	C	C	C		
TA-49 Site Briefing	C	C	C	C	C	C	C		
HAZCOM	F	F	F	F	F	F	F		
LANL "Employee Safety Commitment"	R	R	R	R	R	R	R		
40 hr. HAZWOPER	C	C	C	C	C	C	C		
24 hr. Fieldwork	C	C	C	C	C	C	C		
8 hr. Annual Refresher	AN	AN	AN	AN	AN	AN	AN		
8 hr. HAZWOPER Sup.	C	C							
RCT			F/C						

**TABLE 10 (Cont'd)  
TRAINING REQUIREMENTS**

Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response.

FTL = Field Team Leader; SSO = Site Safety Officer; RCT = Radiological Control Technician; DRO = Drill Rig Operator; DRH = Drill Rig Helper, SAM = Sampler; WMC = Waste Management Coordinator

R = Read training; C = Classroom training; F = Field training; AN = As needed; ER = Employer required

Training Requirement	Personnel Role								
	FTL	SSO	RCT	DRO	DRH	SAM	WMC		
ESH-1/LANL procedure training/RSAA			C						
Rad Worker II	C	C	C	C	C	C	C		
SSO		F/C							
1st Aid	Classroom training for those listed as First-aid/CPR Providers in Section 9 of this SSHASP (only).								
CPR	Classroom training for those listed as First-aid/CPR Providers in Section 9 of this SSHASP (only).								
PPE	F	F	F	F	F	F	F		
Fire Extinguisher Use	F/C	F/C	AN	F/C	F/C	F/C	AN		
Hearing Conservation	F/C	F/C	F/C	F/C	F/C	F/C	AN		
Sanitation	R	R	AN	R	AN	AN	AN		
Materials Handling, Storage, Use, Disposal	R	R	AN	R	R	AN	AN		
Signs, Signals, Barricades	R	R	AN	R	R	AN	AN		
Traffic Flagging and Safety	R	R	AN	R	R	AN	AN		
Tools - Hand and Power	AN	R	AN	R	R	AN	AN		
Electrical Safety Awareness / Safe Conduct of Electrical Work	R	R	AN	R	R	AN	AN		
Lockout/Tagout	R	R	AN	R	R	AN	AN		
Motor Vehicles, Mechanized Equipment, and/or Material Handling Equipment	R	R	AN	R	R	AN	AN		
Rigging Safety	R	R	AN	R	R	AN	AN		
Welding and Cutting	R	R	AN	R	R	AN	AN		
Bloodborne Pathogens	Classroom training for those listed as First-aid/CPR Providers in Section 9 of this SSHASP (only).								

## 11.0 MEDICAL SURVEILLANCE

The medical surveillance requirements of this section have been established in accordance with the contractors medical surveillance program, and Section 11 of the HASP.

TABLE 11 MEDICAL SURVEILLANCE REQUIREMENTS			
Provided in this section are the medical surveillance requirements, (if the exposure level is exceeded), for each task identified in Table 2-2. The tasks are as follows: Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.			
Hazard	Task(s)	Exposure Level Triggering Medical Surveillance Requirement	Requirement
Hazardous Waste Operations	2 - 9	Potential for exposure to hazardous substances or health hazards $\geq$ PELs or published exposure limits during HAZWOPER work	29 CFR 1926.65(f)
Bloodborne Pathogens (Or Potentially Infectious Materials)	9	Any occupational exposure	29 CFR 1910.1030(f)
Hearing Protection	All	$\geq$ 85 dBA	29 CFR 1910.95(g)

## 12.0 QUALITY CONTROL & QUALITY ASSURANCE (QC/QA)

TABLE 12 INSPECTION REQUIREMENTS		
In accordance with Section 12 of the HASP, the FTL shall see that the following inspections are conducted and documented, and that appropriate actions are taken and documented to rectify identified deficiencies, if any. The tasks are as follows: Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.		
Inspection	Inspector	Task(s)
Job Site, Material and Equipment [per 29 CFR 1926.20(b)(2)]	DRO/SSO	All
General Sanitation (per 29 CFR 1926.51)	DRO/SSO	All
Material handling/storage/use/disposal (per 29 CFR 1926.250/252)	DRO/SSO	All
Signs, Signals and Barricades (per 29 CFR 1926.200)	DRO/SSO	All
Motor vehicles and mechanized equip. (per 29 CFR 1926 Subpart O)	SSO, QP or CP as required	All
Drill Rig Inspections	DRO	when used
PPE (per Section 7 and 29 CFR 1926.95)	User	when used
Fall Protection [per 29 CFR 1926.20(b)(2) and ANSI A10.14]	QP or CP and User	when used
Incident/emergency response equipment	SSO	9
Fire extinguishing equipment [per 29 CFR 1926.150(a) and (c)]	DRO/SSO	when used
Tools - hand and power (per 29 CFR 1926 Subpart I)	User and SSO	when used
Welding and cutting equipment (per 29 CFR 1926 Subpart J)	QP or CP and User	when used
Hearing Protection	DRO/SSO	when used
Rigging (per 29 CFR 1926.251)	QP or CP and User	when used
Eyewash station	SSO	when used
Electrical equipment [per 29 CFR 1926.403(b) and/or 416(f)(8)]	QP or CP as required	when used
DRO = Drill Rig Operator; QP = Qualified Person; CP = Competent Person [per 29 CFR 1926.32(f) or (m)]		

### 13.0 RECORD KEEPING

In addition to record keeping requirements of Section 13 of the HASP, the HS records specified below shall be completed in accordance with Section 13 of the HASP and kept on site as indicated below.

<b>Record/Form</b>	<b>Requirement Reference</b>	<b>Keep On site</b>
HASP	HASP Section 1	X
This SSHASP	HASP Section 1	X
Completed Modification Forms	HASP Section 1	X
SSOs Daily Logbook	HASP Section 13.1	X
Documentation of Training Requirements	HASP Section 10	
Documentation of Medical Surveillance	HASP Section 11	
Exposure Monitoring Records	Section 6 of the HASP and applicable exposure monitoring methods in the ER Project Manual for Site HS Activities	X
HS Inspection Records	HASP Section 12.1	X

**APPENDIX A**  
**MAP(S) OF SITE LOCATIONS**  
**AND**  
**ADJACENT FACILITIES**

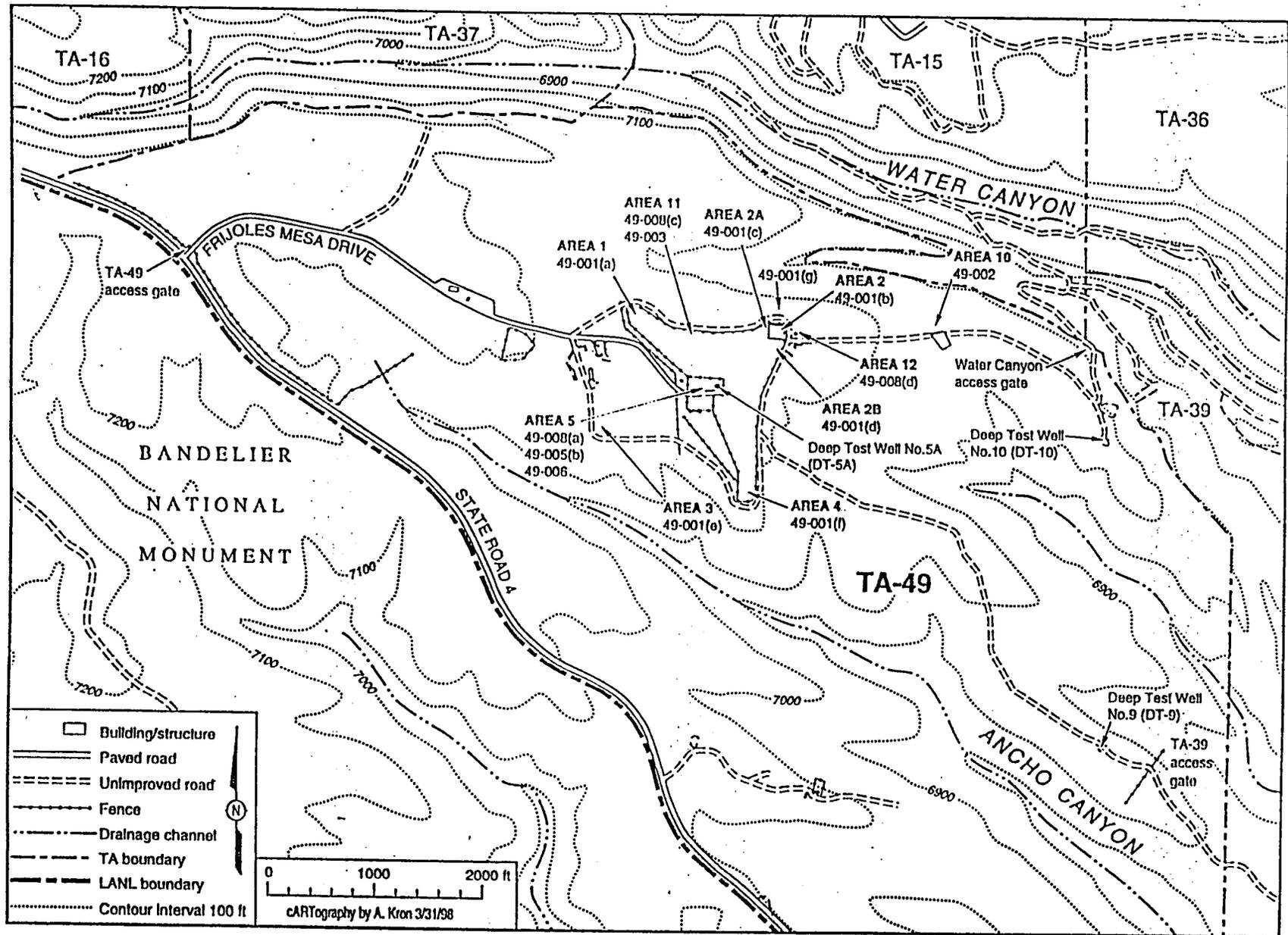


Figure 2-1. Map of MDA AB at TA-49.

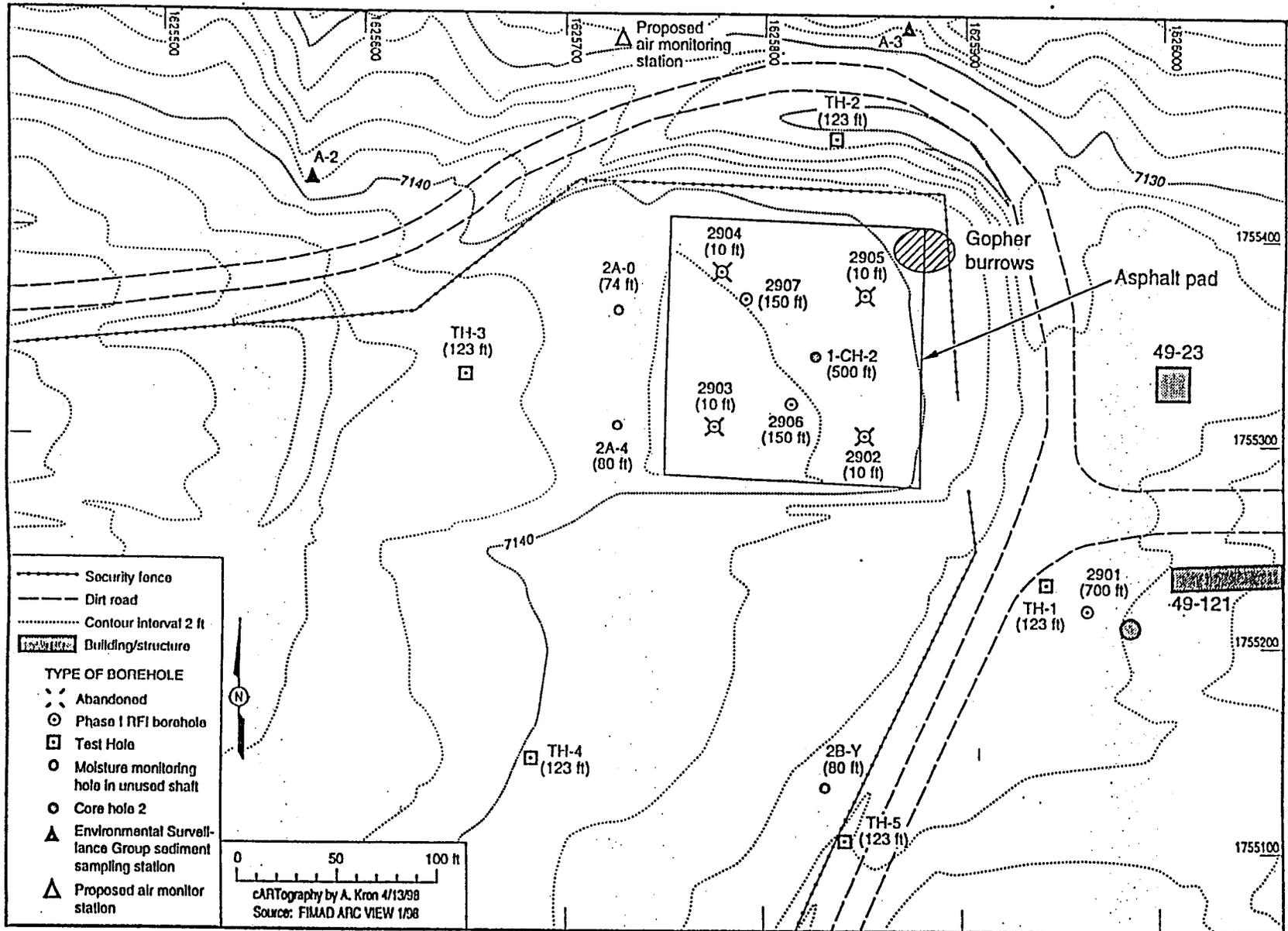
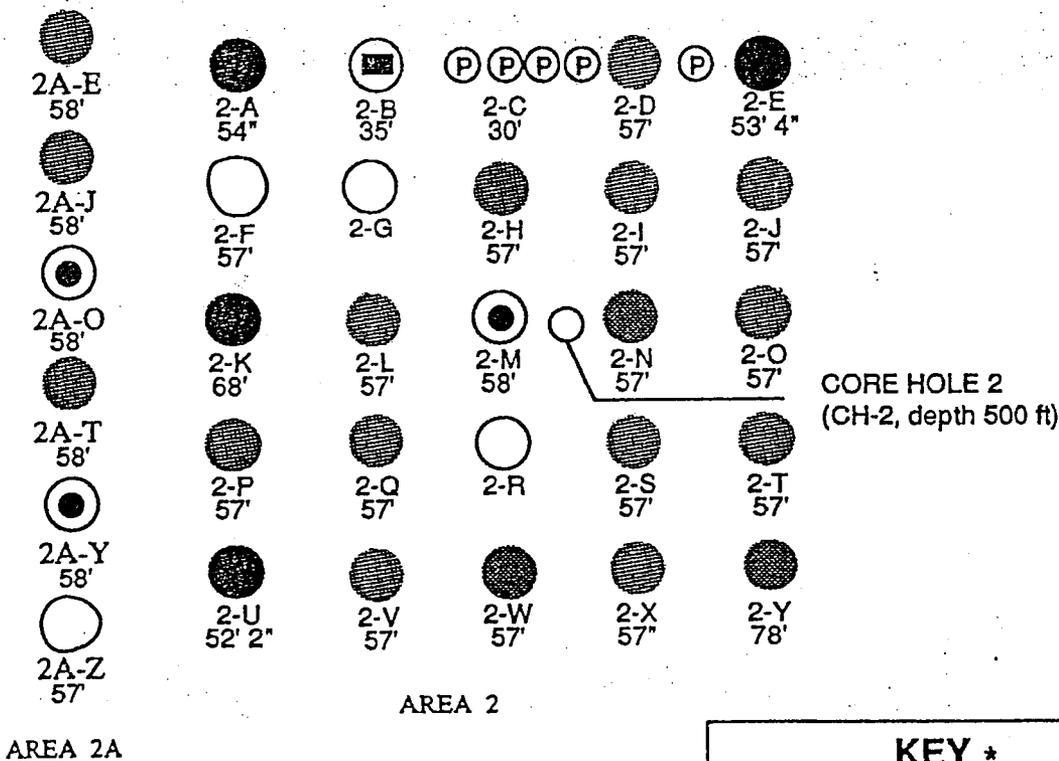


Figure 3-2. Existing sampling hole locations at Area 2.

FIGURE 7.2-1 MDA AB SHOT HOLE PATTERNS & DEPTH

(b) AREA 2 & 2A



HOLES MAPPED (AREA 2) : A, E, K, V, Y

HOLES DESCRIBED IN RECONNAISSANCE NOTES (AREA 2) : D, F, H, J, L, O, S, V, W, X (WEIR AND PURTYMUN, 1962)

\* SHOTS WITH PLUTONIUM MAY HAVE ALSO HAVE INCLUDED URANIUM -235 AND/OR -238. SHOTS WITH URANIUM -235 MAY HAVE INCLUDED URANIUM -238.

HOLE 2-M WAS CONTAMINATED BY SURROUNDING SHOTS

**KEY \***

- SHOT WITH PLUTONIUM
- SHOT WITH URANIUM -235
- SHOT WITH URANIUM -238
- SHOT WITH TRACER
- CONTAINMENT SHOT
- GAS EXPANSION HOLE
- PIPE DUMP HOLE
- PROPOSED - NOT DRILLED
- BACKFILLED - NOT SHOT

## **APPENDIX B**

### **HAZARDOUS SUBSTANCE - HAZARD ASSESSMENT**

**HAZARDOUS SUBSTANCE - HAZARD ASSESSMENT**

This table includes a health hazard assessment, and associated rationales, of each chemical product and site contaminant listed in Table 2-1. This hazard assessment was completed in accordance with Section 4.1 of the HASP. The tasks are as follows: Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.

Substance	Maximum Data		Hazard Assessment Rating/Rationale
	Value	Location	
<b>CHEMICAL SUBSTANCES, PRODUCTS USED ON SITE</b>			
Compressed Gasses Acetylene, Oxygen,	NA	MDA AB	<b>NEGLIGIBLE to MINOR</b> For Tasks 1-7, and 9, exposure to these substances is not anticipated. For Task 8, exposure to these substances is unlikely however, a fire or sudden pressure release involving these substances could result in significant injuries resulting in irreversible harm.
Fuels and Lubricants Diesel, Gasoline			<b>NEGLIGIBLE</b> Only small quantities of these substances will be brought on-site and will be used in accordance with the site's Spill Prevention, Control, and Countermeasures (SPCC) Plan. No exposure to these substances is anticipated.
Oil, Hydraulic Fluid			<b>NEGLIGIBLE to MINOR</b> For Tasks 1, and 3- 9, exposure to these substances is not anticipated. For Task 2, exposure to these substances is possible but would not result in irreversible illness.
Bentonite/Concrete			<b>NEGLIGIBLE to MINOR</b> For Tasks 1, 2 and 4- 9, exposure to this substance is not anticipated. For Task 3, exposure to this substance is possible but would not result in irreversible illness.
Neutron Source			
<b>SITE CONTAMINANTS</b>			
HE	No data available	MDA AB	<b>NEGLIGIBLE</b> It is not anticipated that HE residuals would be encountered in high enough concentrations (5%) to make it reactive.

**HAZARDOUS SUBSTANCE - HAZARD ASSESSMENT (Cont'd)**

Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response.

Substance	Maximum Data		Hazard Assessment Rating/Rationale
	Value	Location	
<b>Radioisotopes</b> U238 U239 Pu239 Am241	Data from the 1998 RFI field sampling effort at MDA AB showed the following rad screening results for soils below the asphalt pad:  For soils between 0 and 12 inches: <u>Highest (Pci/g)</u> <u>Average (Pci/g)</u> Gross α - 540                              Gross α - 221 Gross β - 350                              Gross β - 166 Gross γ - 140                              Gross γ - 89  For soils between 12 and 24 inches: <u>Highest (Pci/g)</u> <u>Average (Pci/g)</u> Gross α - 1420                              Gross α - 388 Gross β - 250                              Gross β - 168 Gross γ - 150                              Gross γ - 100  For soils greater than 24 inches: <u>Highest (Pci/g)</u> Gross α - 477,930 Gross β - 20,810 Gross γ - 60,110 The results for the soil greater than 24 inches below the asphalt pad were isolated to Shaft N only (See Appendix A for the location of Shaft N).		<p align="center"><b>NEGLIGIBLE to MODERATE</b></p> For Task 1, exposure to these contaminants is not expected since this activity will occur outside of the MDA-AB foot print. For Tasks 3-9, exposure to these contaminants is unlikely to occur. For Tasks 2, exposure to these contaminants is possible.  This project involves the removal of the casing in core hole 2 and sealing the hole with bentonite. Core hole 2 is located next to shaft N where the soil rad results are presented to the left. The soil below the asphalt pad is wet to saturated which would reduce the possibility of airborne releases. However, in the unexpected event that contamination above the action levels specified in this SSHASP or the RWP is encountered, the area will be evacuated until the site is reevaluated for personnel exposures.
Tritium	The TA-21 RSA screening data for the soil and gravel directly below the asphalt pad at MDA-AB showed the highest tritium level to be 4,340 Pci/ml.		<p align="center"><b>NEGLIGIBLE to MODERATE</b></p> For Task 1, exposure to this contaminant is not expected. For Tasks 3-9, exposure to this contaminant is unlikely to occur. For Task 2, exposure to this contaminant is possible.

**HAZARDOUS SUBSTANCE - HAZARD ASSESSMENT (Cont'd)**

Task 1 Site Set Up; Task 2 Core Hole Abandonment; Task 3 Sampling/Screening; Task 4 Exposure Monitoring; Task 5 Dust Suppression; Task 6 Equipment/Personnel Decontamination; Task 7 On-site Waste Management; Task 8 Equipment Maintenance; Task 9 Incident Response.

Substance	Maximum Data		Hazard Assessment Rating/Rationale
	Value (mg/kg)	Location	
<b>Metals</b>	The following metal data came from a 1998 re-sampling activity of archived cores from MDA-AB. No indication was given as to the depths from which the samples were collected. The data below represents the highest concentration for each of the metal constituents.		
Aluminum (Al)	12,000	<b>MDA-AB</b>	<p><b>NEGLIGIBLE</b></p> <p>Exposure to these contaminants above their action levels is unlikely to occur since the concentration of total airborne dust would have to exceed 10 mg/m<sup>3</sup> as shown in the Marlow equation on the following page. A safety factor of 10 was used in the equation to depict a worse case scenario. In addition, during the 1998 field sampling effort, the soil beneath the asphalt pad was found to be wet to saturated. This condition will help reduce the amount of airborne particulates.</p>
Antimony (Sb)	0.5		
Arsenic (As)	3.9		
Barium (Ba)	209		
Beryllium (Be)	1		
Cadmium (Cd)	0.101		
Chromium (Cr)	8.2		
Cobalt (Co)	7.5		
Copper (Cu)	7.3		
Lead (Pb)	13.2		
Manganese (Mn)	492		
Mercury (Hg)	0.027		
Nickle (Ni)	7.2		
Selenium (Se)	0.402		
Silver (Ag)	0.42		
Thallium (Tl)	0.402		

## MARLOW EQUATION

### FOR THE METAL CONTAMINATION FOUND AT MDA-AB

Name of Site here                      factor for this site =                      10  
MDA-AB

Chemical	Exposure Limit (mg/m3)	Maximum Soil Concentration (mg/kg)	Exposure Limit Based on Single Compound (mg/m3)	Dust Quotient for Each Compound (level/limit)
Aluminum	5	12,000	4.2E+01	2.40E+03
Antimony	0.5	0.5	1.0E+05	1.00E+00
Arsenic	0.01	3.9	2.6E+02	3.90E+02
Barium	0.5	209	2.4E+02	4.18E+02
Beryllium	0.002	1	2.0E+02	5.00E+02
Cadmium	0.005	0.101	5.0E+03	2.02E+01
Chromium	0.5	8.2	6.1E+03	1.64E+01
Cobalt	0.02	7.5	2.7E+02	3.75E+02
Copper	1	7.3	1.4E+04	7.30E+00
Lead	0.05	13.2	3.8E+02	2.64E+02
Manganese	1	492	2.0E+02	4.92E+02
Mercury	0.05	0.027	1.9E+05	5.40E-01
Nickel	1	7.2	1.4E+04	7.20E+00
Selenium	0.2	0.402	5.0E+04	2.01E+00
Silver	0.01	0.42	2.4E+03	4.20E+01
Thallium	0.1	0.402	2.5E+04	4.02E+00
			Sum	4.94E+03
				20.24

1 at PEL for Mixture =

#### EQUATIONS USED IN THIS CALCULATION

Dust action level =  $(1E+6) \frac{(\text{Exposure Limit mg/m}^3)}{(\text{Concentration mg/kg}) (\text{Safety Factor})}$   
 (For one dust)

Dust action level =  $(1E+6) / (\text{Safety Factor})$   
 (For mixed dusts)

Sum of  $\{ (\text{Concentration mg/kg}) / (\text{Exposure Limit}) \}$

## APPENDIX C

### ON-SITE CHEMICAL, PHYSICAL, AND TOXICOLOGICAL REFERENCES

- The following reference materials will be maintained on-site as well as MSDS for all chemical products brought on-site. These materials will be made available, upon request, to those individuals that may be occupationally exposed to the potential contaminants of concern and/or chemical products during the course of their work.
- Most recent revision of the ACGIH Threshold Limit Values for Chemical Substances and Physical Agents and Biological Indices.
- Most recent revision of the NIOSH Pocket Guide to Chemical Hazards.

**APPENDIX D**  
**EMERGENCY CONTACTS**  
**AND**  
**ROUTE(S) TO MEDICAL SERVICES**

# EMERGENCY CONTACTS AND PHONE NUMBERS

## MEDICAL EMERGENCY/FIRE:

Los Alamos Fire Department:

LANL phone ..... **911**  
Cellular phone..... **667-7080**

## HAZARDOUS RELEASE/SPILL:

LANL EM&R (FSS-20) ..... **667-6211**  
LANL Occupational Medicine Clinic (ESH-2) ..... **667-0660**  
Los Alamos Medical Center Hospital ..... **662-4201**  
Security OS/Pro Force ..... **667-6534**  
Los Alamos Police..... **662-8224**  
Focus Area Health and Safety Rep: ESH-5 (Trung Nguyen) .... **667-7905/104-6650**  
ESH-1Rep: (Clarita Trujillo). ..... **667-3999/104-6663**  
TA-49 Facility Coordinator: (Leo Maes) ..... **667-9462**  
TA-49 Facility Manager: (Ron Brodd)..... **667-2272**  
TA-49 Access Control (Brad Lounsbury) ..... **665-5162**  
LANL, Focus Area Leader: (Allyn Pratt)..... **667-4308**  
FTL: (John DeJoia)..... **662-1359**  
LANL Pager Access..... **665-9800**

## MANAGEMENT CONTACTS:

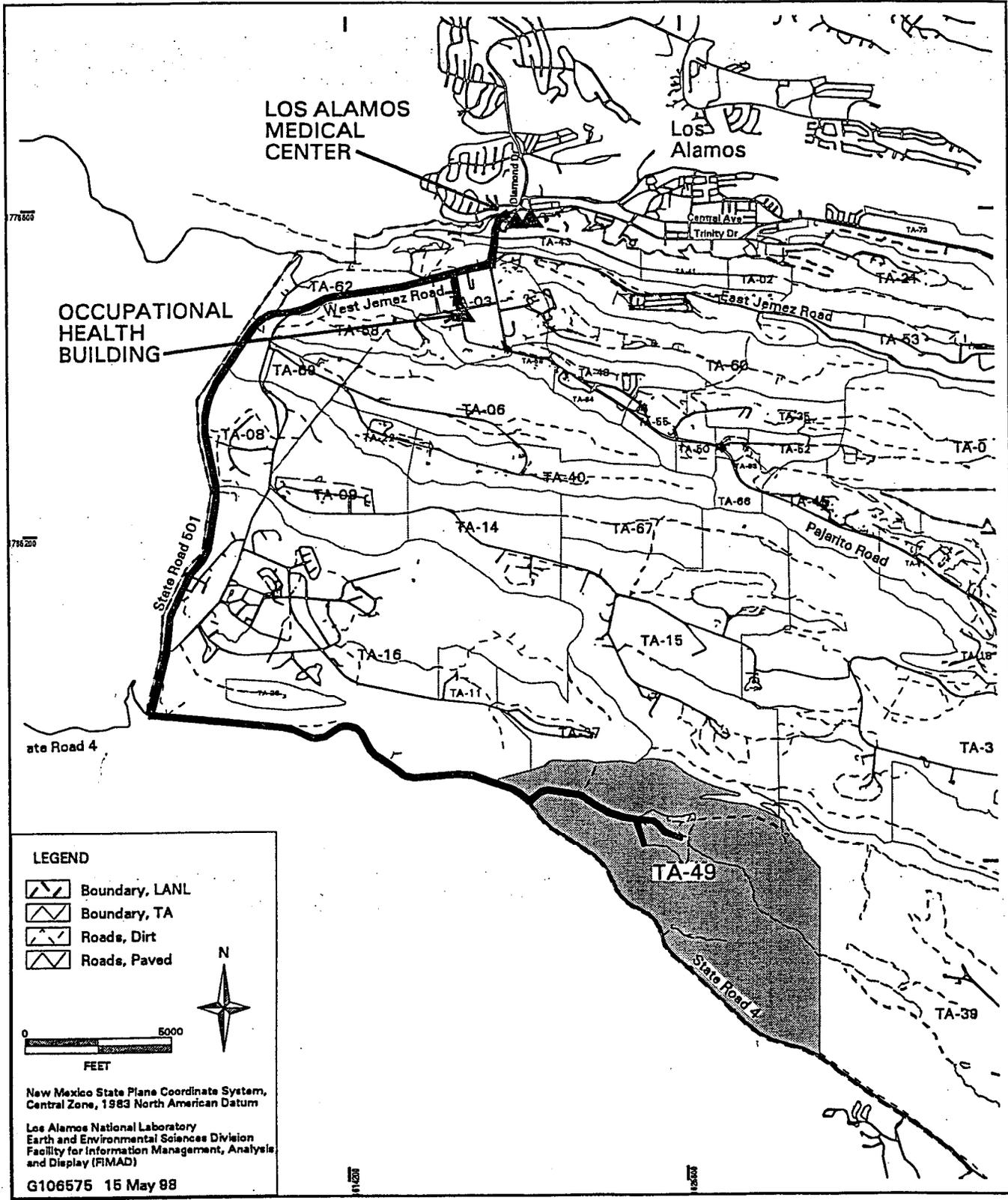
Employer MK/PMC Contacts(Clark Judy) ..... **662-7300**  
Employer (sub-contractor) Contact: (TBD) ..... **(Phone # will be posted on site)**

## EMERGENCY REPORTING INFORMATION:

When calling for emergency services, have the following information available to report:

- Site name/location/phone #
- Caller ID
- Nature of emergency
- Number of personnel involved
- Name and condition of affected employees
- Actions taken and assistance required

# TA-49 Hospital Transportation Route



- LEGEND**
-  Boundary, LANL
  -  Boundary, TA
  -  Roads, Dirt
  -  Roads, Paved



New Mexico State Plane Coordinate System,  
Central Zone, 1983 North American Datum

Los Alamos National Laboratory  
Earth and Environmental Sciences Division  
Facility for Information Management, Analysis  
and Display (FIMAD)

G106575 15 May 88