



Appendix C

Health and Safety Plan

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List of Abbreviations

AA	Atomic Absorption
BLM	Bureau of Land Management
COC	Contaminant of Concern
FIAA	Flame Ionization Atomic Absorption
GFAA	Graphite Furnace Atomic Absorption
GIS	Geographic Information System
GPS	Global Positioning System
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
IDW	Investigation Derived Wastes
KRMC	Kingman Regional Medical Center
NAU	Northern Arizona University
PA	Preliminary Assessment
PPE	Personal Protective Equipment
QA	Quality Assurance
QC	Quality Control
SAP	Sampling and Analysis Plan
SI	Site Inspection
SRL	Soil Remediation Level
XRF	X-ray Fluorescence

1.0 Introduction

This plan has been prepared for implementation by Magma Consulting personnel using operating procedures for which they are appropriately trained. This plan describes lines of authority, site information, safety control measures, and emergency information.

2.0 Key Personnel

Eric Zielske is the site supervisor and Bureau of Land Management (BLM) person-in-charge and is responsible for overseeing all operations. Bridget Bero is the Northern Arizona University (NAU) person-in-charge and is responsible for overseeing all NAU student personnel. NAU student personnel include Naser Alqaoud, David Finley, Josue Juarez, and Jessica Szaro.

3.0 Hazard Analysis

Information regarding the site and its risks are detailed in Table C-1, the Job Hazard Analysis. The purpose of the Job Hazard Analysis is to identify and evaluate the health and safety hazards associated with each site task. Appropriate control methods are selected to eliminate or control the identified risks. Responses to potential hazards are described in Sections 3.1, 3.2, and 3.3.

Table C-1. Job Hazard Analysis

Job Information			
Phase Description:	Preliminary Assessment/Site Inspection		
Tasks:	Sampling - surface soil		
Location:	Arizona Magma Mine; Chloride (Mohave County), Arizona		
Sampling Start Date:	01/20/2017	Sampling End Date:	01/21/2017
Potential Hazards During this Task and/or Operation			
Chemical	Physical	Biological	Radiological
<ul style="list-style-type: none"> - Lead (Pb) - Arsenic (As) 	<ul style="list-style-type: none"> - Heat stress - Falls 	<ul style="list-style-type: none"> - Animals - Insects - Plants 	n/a

Hazard Control Measures Used During this Task and/or Operation		
Administrative Controls:	Follow all standard operating procedures for soil sampling, decontamination, waste disposal, and XRF use. Refer to the SAP in Appendix B for further information.	
Engineering Controls:	none	
PPE Description:	Component	Notes
	Dust mask	
	Disposable white Tyvek coveralls	
	Safety glasses	
	Disposable shoe covers	
	Nitrile gloves	
Dress Code:	Component	Notes
	Hat	
	Boots	
	Long-sleeve shirt	
	Pants	
	Sunglasses	
Emergency Equipment:	Component	Notes
	First aid kit	

3.1 Responses to Heat Stress

To avoid the symptoms of heat stress (fatigue, headache, profuse sweating), personnel should do the following:

- Drink plenty of water
- Avoid fluids containing caffeine
- Take moments to rest and cool down

If a person experiences symptoms of heat stress or heat exhaustion, they should employ the following responses:

- Remove tight or unnecessary clothing
- Enter a shaded area
- Take small sips of water every 30 seconds to 1 minute

Should the person not respond positively to the actions listed above, refer to Section 6.0 for emergency information and hospital directions.

3.2 Avoiding Falls

To avoid falls that may result in injury, personnel should look where they are stepping before moving forward and employ the buddy system. If a harmful fall does occur, refer to Section 6.0 for emergency information and hospital directions.

3.3 Encounters with Plant and Animal Life

To avoid potentially harmful encounters with plant and animal life at the site, personnel should be fully aware of their surroundings at all times during the investigation and employ the buddy system. Plant and animal life that may be seen at the site include cactus and snakes. Should a harmful encounter occur, refer to Section 6.0 for emergency information and hospital directions.

4.0 Required Training

This section identifies necessary trainings for all personnel to work safely on the site. Training requirements are based on the Job Hazard Analysis and relevant Occupational Health and Safety Administration (OSHA) standards. Personnel who have not completed the training are not permitted to participate in field activities. Required trainings for this site inspection include the following:

- 40-hour initial Hazardous Waste Operations and Emergency Response (HAZWOPER)
- NAU Chemical Hygiene training
- NAU Field Safety training

5.0 Decontamination Procedures/Solutions

This section describes decontamination procedures for all personnel, equipment, and instruments. These procedures help minimize the contact and transfer of contaminants outside of the waste site. Decontamination procedures for this site inspection include the following:

- Personnel: Gloves, shoe covers, and Tyvek coveralls will be placed in a garbage bag and returned to NAU for proper disposal.
- Equipment: Decontaminated on-site and returned to the NAU campus.

6.0 Emergency Information

The nearest hospital to the waste site is the Kingman Regional Medical Center (KRMC), approximately 30 minutes away by car. The hospital's address and phone number are listed in Table C-2.

Table C-2. KRMC Contact Information

Address:	3269 Stockton Hill Rd, Kingman, AZ 86409
Phone:	(928) 757-2101

Directions from the waste site to the hospital are detailed in Table C-3.

Table C-3. Directions from AZ Magma Mine to KRMC

1.	Drive south from waste site until reaching Co Hwy 125
2.	Turn right onto Co Hwy 125, continue to US-93 South
3.	Turn left onto US-93 South, continue to Kingman
4.	Turn left at US-93 South/I-40 East toward Flagstaff
5.	Continue to exit 51 for Stockton Hill Rd
6.	Continue to Sycamore Ave, take a u-turn
7.	Continue to Kingman Regional Medical Center on right

A map of the drive from the AZ Magma Mine to Kingman is presented in Figure C-1.

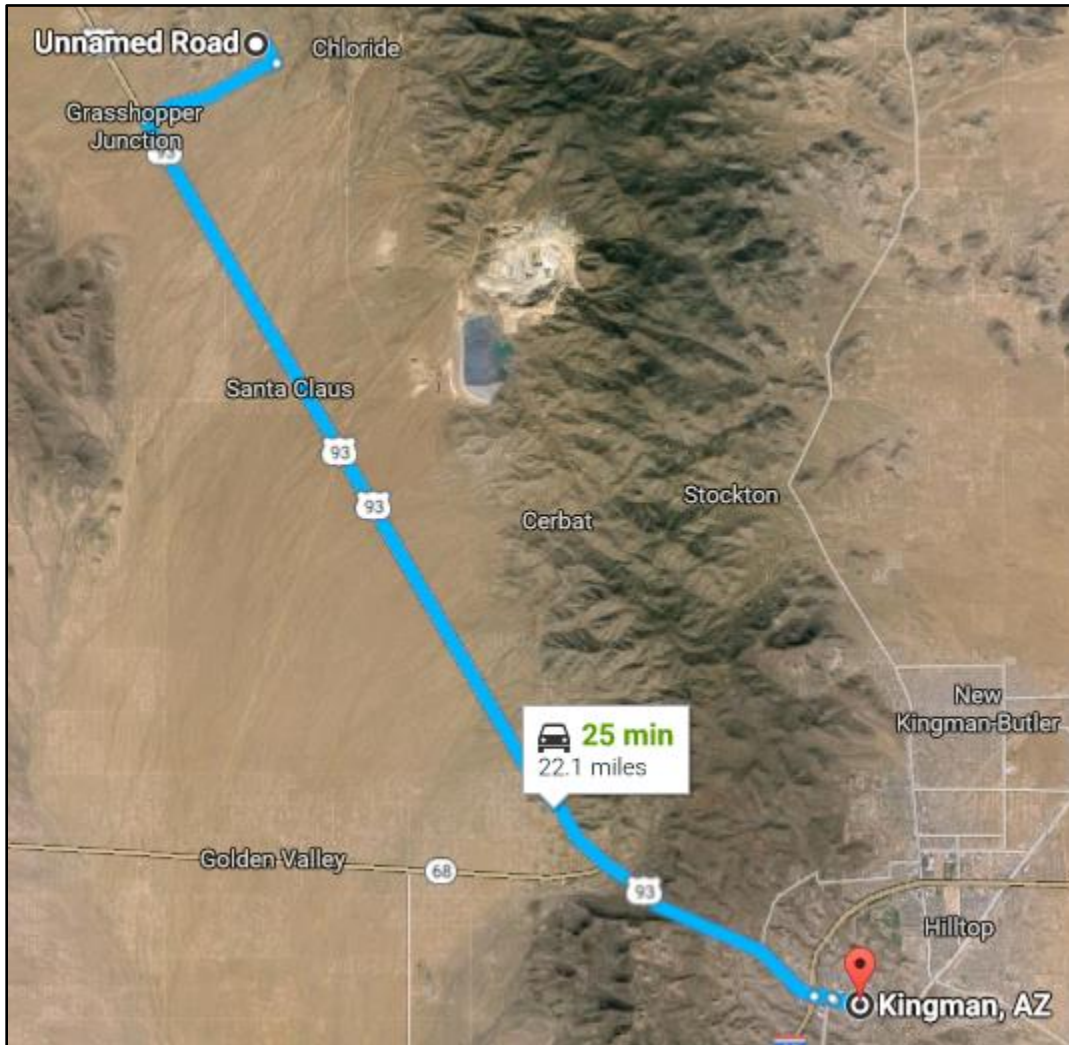


Figure C-1. Map from AZ Magma Mine to KRMC