



*Sundance*  
Consulting Inc.

FINAL

## SITE SAFETY AND HEALTH PLAN

### Fort Wingate Semi-annual Groundwater Monitoring Fort Wingate Depot Activity, Gallup, New Mexico

Contract No. W9126G-12-R-0087 Task Order No. 0001

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# SSHP Acknowledgement

**WORKER ACKNOWLEDGEMENT OF THE SITE SAFETY AND HEALTH PLAN AND SITE ORIENTATION**

I have read or been trained to the contents of this APP/SSHP. I understand the contents, and I agree to abide by its requirements. I also have been properly trained, medically monitored, and fit-tested as required for the work that I am to perform. I understand that failure to comply with the provisions of this plan can lead to disciplinary action and possible termination from the project, or Sundance. Documentation of worker acknowledgment will be placed in the Project Records.

Printed Name	Signature	Date

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## ***Acronyms and Abbreviations***

°C	degrees Celsius
°F	degrees Fahrenheit
AHA	Activity Hazard Analysis
BBP	Blood-borne pathogen
BEC	BRAC Environmental Coordinator
BRAC	Base Realignment and Closure
CIH	certified industrial hygienist
COIs	contaminants of interest
COR	Contracting Officer Representative
CPR	cardiopulmonary resuscitation
DEET	Diethyltoluamide
EZ	exclusion zones
FWDA	Fort Wingate Depot Activity
FID/PID	Flame-Ionization Detector/Photo-Ionization Detector
FTL	Field Team Lead
GMP	Groundwater Monitoring Plan
HazCom	Hazard Communications
HAZWOPER	Hazardous Waste Operations and Emergency Response
H&S	Health and Safety
HSM	Health and Safety Manager
HTRW	Hazardous, Toxic and Radioactive Waste
IDW	investigation-derived waste
MEC	Munitions and Explosives of Concern
mph	miles per hour
MPPEH	material potentially presenting an explosive hazard
MSDS	Material Safety Data Sheets
MSP	Medical Surveillance Program
NMED	New Mexico Environment Department
No.	Number
OB/OD	open burn/open detonation
OESS	Ordnance and Explosives Safety Specialist
OSHA	Occupational Safety and Health Administration
PM	Project Manager
PTL	Project Technical Lead
PPE	personal protective equipment
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
RMSF	Rocky Mountain Spotted Fever
SCBA	self-contained breathing apparatus
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
Sundance	Sundance Consulting, Inc.
SUXOS	Senior UXO Supervisor
SVOCs	semi-volatile organic compounds
SZ	Support zone
TEAD	Tooele Army Depot
TNT	Trinitrotoluene
UL	Underwriters Laboratories

US Army	United States Department of the Army
USACE	United States Army Corps of Engineers
UXO	Unexploded Ordnance
VOCs	volatile organic compounds
ZIST	Zone-Isolation Sampling Technology



# 1.0 Introduction

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This document will serve as the project Site Safety and Health Plan (SSHP) for semiannual groundwater monitoring program at the Fort Wingate Depot Activity (FWDA) in accordance with the most recently New Mexico Environment Department (NMED) approved Interim Facility-Wide Ground Water Monitoring Plan and the Installation's Resource Conservation and Recovery Act (RCRA) Permit Number (No.) (NM 6213820974), Sections V and VIII.B.

## 1.1 Background

Sundance Consulting Inc. (Sundance) will perform the groundwater monitoring activities for United States Army Corps of Engineers (USACE), Contract No. W9126G-12-R-0087, Task Order No. 001. This SSHP describes the Health and Safety (H&S) guidelines developed to protect onsite personnel, visitors, and the public from hazards encountered during field activities associated with the Interim Facility-Wide and Off-Site Wells Groundwater Monitoring Program (GMP) to be conducted on a semiannual basis at the FWDA. The procedures and guidelines contained herein were based upon the best information available during preparation of the SSHP. Specific requirements may be revised if new information is received or conditions change. This SSHP has been prepared in accordance with the following:

- Engineer Manual 385-1-1, Safety and Health Requirements Manual (USACE, current edition)
- Engineer Regulation 385-1-92, Safety and Occupational Health Requirements for Hazardous, Toxic and Radioactive Waste (HTRW) (USACE, 2003b)
- NMED, RCRA Permit No. NM6213820974, Sections V and VIII.B., (NMED 2005)

## 1.2 Sundance Safety Policy

Sundance believes in promoting a strong safety culture by providing each associate with the training, support, and resources needed to perform their job safely. Sundance believes that nothing is more important than the safety and well-being of their associates in the work place. We strive to limit our risk to associates and exposure in the work place and each associate is empowered to stop work if they feel their safety or the safety of fellow associates is compromised. Associates are encouraged to speak up without fear of reprisal and understand they are a key component to safe execution on the job.

## 1.3 SSHP Approval and Compliance by Site Personnel

All Sundance, subcontractor, and Government personnel involved in this project shall carefully read this document prior to participation in any on-site tasks that involve potential exposure to safety or health hazards. Questions related to the information in this SSHP will be addressed to,

and resolved by, the Sundance Site Safety and Health Officer (SSHO). After reading this SSHP, site personnel will complete the SSHP Acknowledgement located in the front of this document, indicating their understanding of, and willingness to comply with, the requirements in this SSHP. All site personnel will exercise reasonable caution at all times and shall immediately report to the SSHO any site conditions which may pose a safety or health hazard to site personnel. It is the responsibility of each manager, supervisor, individual employee, and subcontractor to take notice of any unsafe situations and report them immediately so that proper action can be taken. Additionally, it is the responsibility of each employee to keep their personal safety and the safety of all site personnel uppermost in their mind at all times. Unsafe working habits, horseplay, etc., which could endanger the health and safety of others, will not be tolerated. Disciplinary action up to and including termination will result from such actions.

## **1.4 Site Location and Description**

The FWDA currently occupies approximately 24 square miles (15,277 acres) of land in western New Mexico in McKinley County (Figure 1-1: Site Location Map). The FWDA is located approximately 7 miles east of Gallup and about 130 miles west of Albuquerque. The main entrance to the FWDA is on U.S. Highway 66, west from Exit 33 off Interstate 40. The Facility is surrounded by federally owned and administered lands, including national forests, Zuni tribal lands, and Navajo tribal lands. North and west of the Facility are Navajo trust and Native American allotted lands, to the east are lands that are administered by the Bureau of Indian Affairs, and to the south and southeast is the undeveloped Cibola National Forest

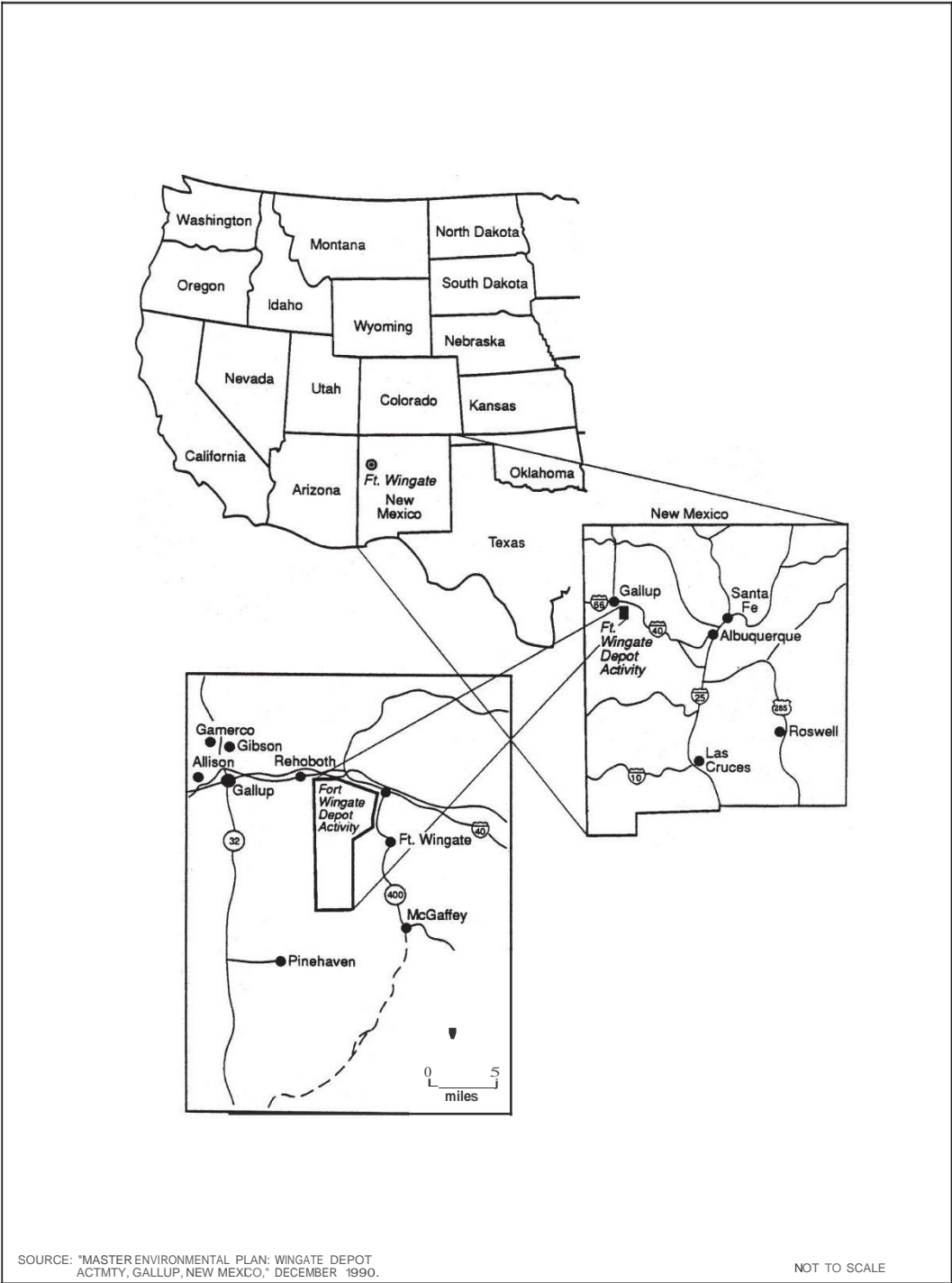
## **1.5 Site History and Setting**

Originally founded in 1860 as a cavalry post, the U.S. Army established Fort Wingate as a munitions storage depot in 1918. The FWDA installation has had a number of missions since then, including ordnance storage, testing, and demilitarization, as well as missile defense testing. Since 1975, the installation has been under the administrative command of Tooele Army Depot (TEAD), located near Salt Lake City, Utah.

The installation was closed in 1993 under the Defense Authorization Amendments and Base Realignment and Closure (BRAC) Act of 1988. In 2002, the Army reassigned many functions at FWDA to the BRAC Division, including: property disposal, caretaker duties, management of caretaker staff, and performance of environmental restoration and compliance activities. TEAD retained command and control responsibilities, and continues to provide support services to FWDA. Facilities at FWDA include approximately 500 concrete bunkers located throughout the post, two former open burn/open detonation (OB/OD) areas, a workshop area, and various mission-support service structures located in the administration area.

At the present, approximately half of the FWDA is leased to the Missile Defense Agency and is used for operations related to missile testing. The remaining FWDA operations are focused on

Figure 1-1: Site Location Map



assessment and remediation of contamination resulting from past military activities. Efforts to remediate affected areas have concentrated on the removal of exploded and unexploded ordnance, in addition to characterizing soil across the installation and conducting semi-annually groundwater monitoring. The installation can be divided into several areas based upon location and historical land use. These major land-use areas include the following:

- The Administration Area—Located in the northern portion of the installation and encompasses approximately 800 acres; consists of former office facilities, housing, equipment maintenance facilities, warehouse buildings, and utility support facilities.
- The Workshop Area—Located south of the Administration Area and encompasses approximately 700 acres; consists of an industrial area containing former ammunition maintenance and renovation facilities, the former trinitrotoluene (TNT) washout facility, and the TNT Leaching Beds Area.
- The Magazine (Igloo) Area—Located in the central portion of the installation and covers approximately 7,400 acres; consists of areas that encompass 10 Igloo Blocks (A through H, J, and K) that contain 732 earth-covered igloos and 241 earthen revetments previously used for munitions storage.
- The OB/OD Areas—Located within the southwest and western portions of the installation; the OB/OD Area can be separated into two sub-areas based on period of operation:
  - *Closed OB/OD Area*—Inactive OB/OD unit that was used to treat military munitions and explosive-contaminated waste from 1948 to 1955; includes the Old Burning Ground, the Demolition Landfill Area, and the Old Demolition Area (PMC, 1999)
  - *Current OB/OD Area*—Inactive OB/OD unit where burning and detonation operations were performed after 1955 until installation closure in 1993 (PMC, 1999); contains the OB/OD Unit Hazardous Waste Management Unit identified in the Permit
- Protection and Buffer Areas—Located adjacent to the eastern, northern, and western boundaries of the installation and encompasses approximately 4,050 acres; consists of buffer zones surrounding the former magazine and demolition areas.

At present, FWDA has been undergoing final environmental restoration prior to property transfer/reuse. As part of the planned property transfer to the Department of Interior, the installation has been divided into reuse parcels with each site being addressed on a parcel-by-parcel basis.

## **1.6 Purpose and Objectives of Semiannual Groundwater Sampling**

The purpose of Facility-Wide semiannual GMP is to perform a comprehensive assessment of groundwater contamination at FWDA. Samples shall be collected from 83 monitoring wells on the facility and 4 production wells located adjacent to FWDA on tribal lands. Monitoring wells are

sampled using various sampling methods. Forty-three monitoring wells are equipped with BESST, Inc. low-flow sampling pumps; 9 monitoring wells are equipped with Bennett high volume sampling pumps; 7 monitoring wells are equipped with BESST pumps with Zone-Isolation Sampling Technology, also known as ZIST; 13 monitoring wells are hand-bailed with disposable bailers; the remaining 11 monitoring wells are sampled using a 12-volt submersible pump that requires decontamination between and after each use.

A Contaminant of Interest (COI) is a chemical that exceeds or is likely to exceed the groundwater cleanup levels and is associated with known historical waste management activities. Meeting these objectives will support selection of appropriate corrective measures for the FWDA. Tasks associated with the Interim GMP include the following:

- Collect quarterly groundwater elevation data from all existing and active monitoring wells.
- Collect semiannual groundwater samples from 83 active monitoring and 4 tribal wells using the methods described above in the GMP and submit groundwater samples for specific chemical analyses.
- Containerize, manage, and dispose of purge water.

## **2.0 Staff Organization, Qualifications, and Responsibilities**

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The Sundance Project Manager (PM), Sundance site safety and health manager (SSHO), and USCAE Ordnance Explosives and Safety Specialist are responsible for formulating and enforcing H&S requirements and implementing the SSHP. Below is a description of project staff and responsibilities and Figure 2-1 shows the lines of authority organizational matrix.

### **2.1 Project Technical Lead**

Mr. David Henry is the USACE Project Technical Lead (PTL) for this GMP. Mr. Henry will be responsible for overall project management, oversight, and will also serve as the contract administrator.

### **2.2 Contracting Officer Representative**

Mr. Matthew Masten, will be the Contracting Officer Representative (COR) for the USACE. Mr. Masten is also the FWDA groundwater Chemist and will, in coordination with the Contracting Officer, appoint Quality Assurance (QA) Representatives and other technical staff as needed.

### **2.3 FWDA BRAC Environmental Coordinator**

The FWDA BRAC Environmental Coordinator (BEC) is Richard Cruz. He will be the main contact while operations are ongoing at the FWDA. His responsibilities include monitoring and facilitating all operations at FWDA.

## **2.4 Ordnance and Explosives Safety Specialist**

During the conduct of operations potentially involving munitions and explosives of concern (MEC), the USACE will provide an Ordnance and Explosives Safety Specialist OESS when working in the OB/OD. The OESS will be responsible for safety and health requirements within the OB/OD area, as presented in this SSHP. The OESS will have completed the Occupational Safety and Health Administration (OSHA) 40-hour HAZWOPER site worker and refresher training, and the 8-hour Supervisor/Manager training requirements in accordance with 29 Code of Federal Regulations (CFR) 1910.120 and will meet the personnel requirements of Department of Defense Explosives Safety Board Technical Paper 18 (DDESB TP 18), Minimum Qualifications for UXO Technicians and Personnel. To ensure on-site safety and health during sampling in the OB/OD, the OESS will implement the responsibilities outlined of the SSHO above and will:

- Review the SSHP to ensure the MEC, safety, and health issues have been adequately addressed and controlled.
- Act as the lead technical consultant for all on-site MEC related safety matters.
- Assist in the conduct of site training and briefings as they relate to MEC and other safety issues.
- Ensure, and when necessary, enforce compliance with the SSHP.

## **2.5 Project Manager**

PM, Dale Flores, reports to the USACE PTL and COR and has overall responsibility for the safety of Sundance employees and their contractors during project activities.

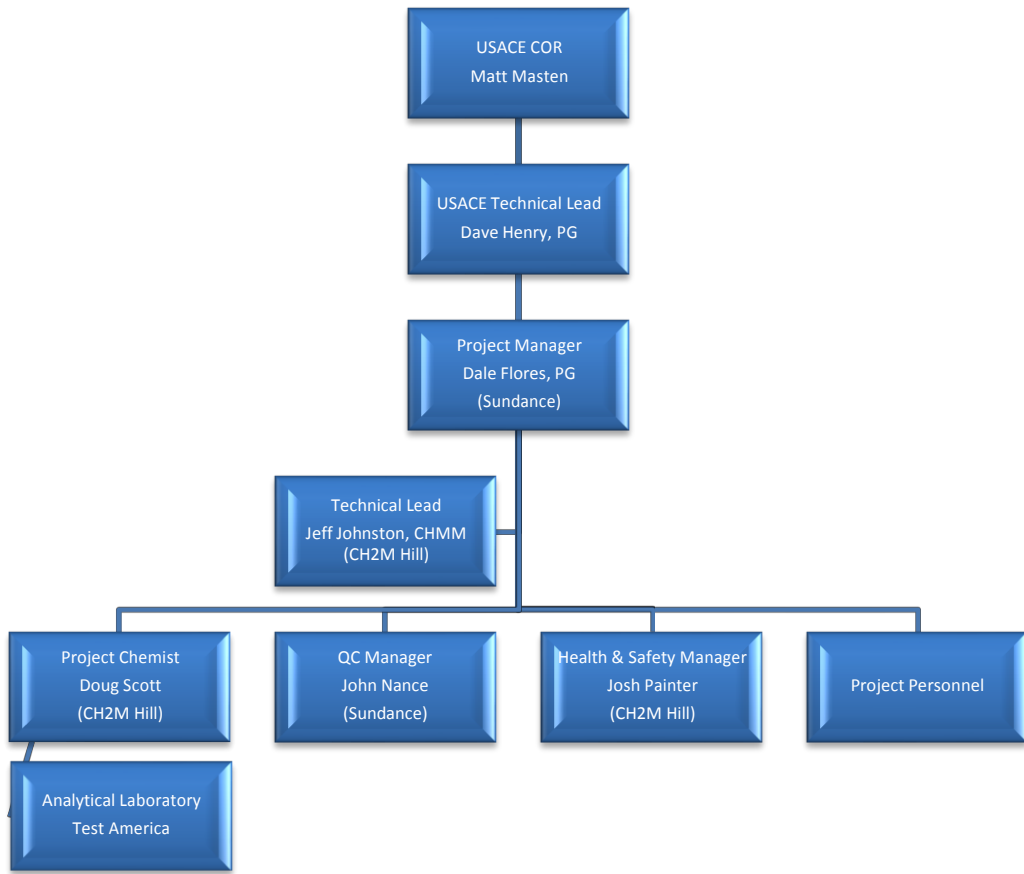
## **2.6 Health and Safety Manager**

Mr. Josh Painter will serve as the Health and Safety Manager (HSM) for this project. Mr. Painter is a Certified Safety Professional and will support the project as listed within this SSHP.

## **2.7 Field Team Leader**

The Field Team Leader (FTL), who is to be determined upon commencing field activities, will have experience running similar projects. His duties will include oversight or direction of the field team, interfacing with all field team personnel and interfacing with the client during the daily field operations. The FTL will be assisted by the SSHO and Sundance PM as needed.

**Figure 2-1: Project Authority Matrix**



## 2.8 Site Safety and Health Officer

Mr. John Nance will be the SSHO for this project. The SSHO will be responsible for the on-site implementation of the H&S requirements presented in this SSHP. The SSHO will have completed the OSHA 40-hour HAZWOPER site worker and refresher training, and the 8-hour Supervisor/Manager training requirements in accordance with 29 CFR 1910.120. To ensure on-site safety and health, the SSHO will ensure that all work is conducted safely and in accordance with this SSHP, conduct daily safety briefing, conduct and document site training related to site-specific hazards, evaluate personal protective equipment (PPE) requirements, and ensure that applicable PPE is issued to and used by all employees. In addition the SSHO will:

- Implement and enforce the Sundance Alcohol/Drug Abuse Policy.
- Investigate injuries, illnesses, accidents, incidents, and near misses.
- Conduct visitor orientation, daily safety inspections, and weekly safety audits.
- Ensure field implementation of the SSHO.

In addition, he will conduct daily inspections to determine if operations are being conducted in accordance with this SSHP, requirements, and OSHA regulations. The HSM and SSHO have the authority to take immediate steps to correct unsafe or unhealthful conditions including the stoppage of fieldwork when deemed necessary.

## 2.9 Visitors

Site access by delivery or repair personnel, public or government officials, visitors, or local residents will be limited to support areas only. Support Zone (SZ) access will be limited to designated work, delivery, or observation areas to minimize any potential exposure to site contaminants. Authorization for limited site access will be determined on a case-by-case basis by the SSHO or OESS in consultation with the FTL or PM. Site access for such personnel will be limited to areas with no potential for exposure during routine operations. These personnel will be escorted on site and will be strictly prohibited from entering the Exclusion Zone (EZ).

Visitors will not be permitted to enter a UXO support site unless they have completed the appropriate training and medical surveillance requirements and have the proper PPE. Authorized visitors will be briefed on the hazards present at that location by the OESS. Visitors will be responsible for compliance with the requirements specified in this SSHP.

## 2.10 Stop Work Authority

Sundance and its contractors have the express authority at any time during the execution of work to call for a "Stop Work". Any crew member who witnesses or perceives a task or activity being planned or performed in such a manner that may lead to endangering health, safety, security or the environment can and should stop the work. To protect the health and safety of all



personnel, employees that knowingly disregard safety policies/procedures may be subject to disciplinary actions up to and including termination.

Upon issuing the Stop Work Order, the, SSHO, FTL, OESS and PM shall be notified and request assistance in implementing corrective action so that operations may be safely resumed. Collectively they will evaluate the task being performed and take the steps necessary to complete the task in a safe manner. If the management staff and the H&S staff are unable to agree on the necessary corrective actions, or the appropriateness of the Stop Work Order, the issue shall be referred to the HSM. Resumption of safe operations is the primary objective; however, operations shall not resume until the H&S professional has given approval that workplace conditions meet acceptable safety standards.

### **3.0 Hazard Analysis**

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To ensure the safety and health of site personnel and the public, and to comply with the hazard assessment requirements of the U.S. Department of Labor, OSHA PPE standard (29 CFR 1910.132(d)) and EM 385-1-1, Sundance has performed an Activity Hazard Analysis (AHA) for each site task. The tasks listed have a potential for exposure to site hazards that will require the use of engineering controls, administrative controls, or PPE to minimize or reduce worker exposure. Groundwater monitoring activities at the FWDA will consist of the following tasks:

Task 1: General site setup/vehicle operation

Task 2: Collecting groundwater measurements from monitoring wells

Task 3: Groundwater sampling from monitoring wells

Task 4: Groundwater sampling in the OB/OD

For each Task listed site personnel will utilize the procedures and PPE described in this SSHP to control or eliminate the hazards.

Personnel and visitors will be familiar with site hazards and will strictly adhere to the appropriate safety procedures prescribed in this SSHP, including the AHA for each task presented in Appendix A. Each AHA identifies potential safety, health, biological, and environmental hazards associated with specific tasks, and provides for the protection of personnel, the community, and the environment. Additional AHAs will be developed for new tasks and added to this SSHP as necessary. Because of the complexity and constant change of project conditions, sites must be continually inspected to identify new hazards.

While the hazard analyses and risk assessments presented in this SSHP have been developed using the best available data, all site personnel must understand that the evaluation of site characteristics and hazards is an ongoing process that will continue throughout the duration of the project and in which site personnel play a major role. All site personnel shall be vigilant in

recognizing workplace hazards and bringing them to the attention of the SSHO, and/or the PM. If changes occur in the level or types of hazards present for a currently evaluated task, or if a new task is added to the GMP, the SSHO will inform the PM of the change. If needed, a new AHA will be completed to outline the hazards, control methods, and PPE for the task. Any additions to the approved SSHP will be reviewed and approved by the responsible Sundance personnel and submitted to the FWDA BEC and USACE PTL for final approval. Once approved, the changes will be added to the SSHP.

### **3.1 Chemical Hazards**

Hazardous substances are those materials that can threaten human health and/or environmental well-being if the substance has been improperly disposed of or uncontrollably released into the environment. This phrase is used to describe chemical contaminants to which site personnel may be exposed as a result of the release of hazardous constituents capable of causing harm to site personnel if encountered during site operations. Exposure to contaminants with a potential for causing an occupational exposure situation may be possible during performance of ground water sampling under the GMP. As detailed in the GMP, detected concentrations of COIs in ground water exceed ground water cleanup levels in some locations within FWDA. These COIs may include: explosives, metals, nitrate, nitrite, volatile organic compounds (VOCs), and perchlorate. In addition, semi-volatile organic compounds (SVOCs), pesticides, and herbicides have also been detected in soil and ground water in some locations within FWDA.

### **3.2 On-Site Chemical Hazards**

Potential for limited exposure may occur during tasks that require the handling of potentially contaminated ground water. Potential chemicals of concern historically used at FWDA and historically detected during previous investigations include: explosives, metals, nitrate, nitrite, perchlorate, VOCs, SVOCs, pesticides, and herbicides. These chemicals may present both acute and long term exposure hazards, although the potential for exposure during tasks as currently planned is low.

Potential for exposure may also occur during tasks that require the use of products that contain hazardous constituents. The products that may be used and contain hazardous constituents include: gasoline and two stroke engine oil/gasoline mixtures. Personnel exposures will be controlled and minimized based on the limited quantities that will be used at any one time and because these products will be used in well-ventilated conditions.

The procedures and PPE outlined in this SSHP will be used as necessary to further reduce or eliminate the potential for personnel exposure to these hazardous constituents. If site activities are modified, or evidence of environmental contamination is found, the potential for chemical exposure will be re-evaluated. Information on the hazardous constituents that may present potential exposure hazards is presented in Table 3-1.

**Table 3-1**

**Occupational Exposure and Toxicological Properties for Contaminants with Occupational Health Concerns**

Contaminant	OSHA PEL	NIOSH REL	ACGIH TLV	OSHA/ACGIH STEL	NIOSH IDLH	Exposure Route	Symptoms	Target Organs
Gasoline	ND	ND	ND	ND	ND	INH, ABS, ING, CON	Irritation eyes, skin, mucous membrane; dermatitis; headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis (aspiration liquid); possible liver, kidney damage; [potential occupational carcinogen]	Eyes, skin, respiratory system, central nervous system, liver, kidneys
Fuel Oil #1	ND	100 mg/m <sup>3</sup> TWA	ND	ND	100 ppm	INH, ING, CON	Irritation eyes, skin, nose, throat; burning sensation in chest; headache, nausea, lassitude (weakness, exhaustion), restlessness, incoordination, confusion, drowsiness; vomiting, diarrhea; dermatitis; chemical pneumonitis (aspiration liquid)	Eyes, skin, respiratory system, central nervous system
Toluene	200 ppm TWA, 300 ppm CEILING, 500 ppm 10 minute MAXIMUM PEAK	100 ppm (375 mg/m <sup>3</sup> ) TWA	50 ppm (188 mg/m <sup>3</sup> ) TWA [skin]	150 ppm (560 mg/m <sup>3</sup> ) STEL	500 ppm	INH, ABS, ING, CON	Irritation eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage	Eyes, skin, respiratory system, central nervous system, liver, kidneys

Contaminant	OSHA PEL	NIOSH REL	ACGIH TLV	OSHA/ACGIH STEL	NIOSH IDLH	Exposure Route	Symptoms	Target Organs
Benzene	TWA 1 ppm	TWA 0.1 ppm, STEL 1 ppm	10 ppm (32 mg/m <sup>3</sup> ) TWA	5 ppm	500 ppm	INH, ABS, ING, CON	Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen]	Eyes, skin, respiratory system, blood, central nervous system, bone marrow
Cadmium	0.005 mg/m <sup>3</sup> TWA	ND	0.01 mg/m <sup>3</sup> (total dust) TWA, 0.002 mg/m <sup>3</sup> (respirable dust) TWA	ND	9 mg/m <sup>3</sup>	INH, ING	Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia; [potential occupational carcinogen]	Respiratory system, kidneys, prostate, blood
Chromium	1 mg/m <sup>3</sup> TWA	0.5 mg/m <sup>3</sup> TWA	0.5 mg/m <sup>3</sup> TWA	ND	250 mg/m <sup>3</sup>	INH, ING, CON	Irritation eyes, skin; lung fibrosis (histologic)	Eyes, skin, respiratory system
Trinitrotoluene (TNT)	1.5 mg/m <sup>3</sup> TWA	0.5 mg/m <sup>3</sup> TWA	0.1 mg/m <sup>3</sup> (total dust) TWA, 0.002 mg/m <sup>3</sup> (respirable dust) TWA	ND	500 mg/m <sup>3</sup>	INH, ABS, ING, CON	Irritation skin, mucous membrane; liver damage, jaundice; cyanosis; sneezing; cough, sore throat; peripheral neuropathy, muscle pain; kidney damage; cataract; sensitization dermatitis; leukocytosis (increased blood leukocytes); anemia; cardiac irregularity	Eyes, skin, respiratory system, blood, liver, cardiovascular system, central nervous system, kidneys

Contaminant	OSHA PEL	NIOSH REL	ACGIH TLV	OSHA/ACGIH STEL	NIOSH IDLH	Exposure Route	Symptoms	Target Organs
Perchlorate (ammonium)	ND	ND	ND	ND	ND	INH, ING	Irritation eyes, skin; ingestion – burning sensation, nausea, vomiting, diarrhea)	Respiratory system, thyroid

ABS – Absorption

ACGIH - American Conference of Governmental Industrial Hygienists

CON - Contact

IDLH - Immediately Dangerous to Life and Health

ING - Ingestion

INH - Inhalation

mg/m<sup>3</sup> - milligram per cubic meter of air

ND - no data

NIOSH - National Institute for Occupational Safety and Health

ppm – Parts Per Million

### **3.3 Ordnance and Explosives Hazards**

As noted in Section 1.5: *Site History and Setting*, MEC investigation and removal actions have been performed in selected locations within FWDA. The potential for encountering MEC items in the OB/OD Area is high. The safety and health procedures that will be used for reducing the hazards associated with MEC during activities under the GMP are discussed in the following sections of this SSHP.

### **3.4 Munitions and Explosives of Concern**

MEC is defined as ammunition; ammunition components; chemical or biological warfare material; or explosives that have been abandoned, expelled from demolition pits or burning pads, lost, discarded, buried, or fired. UXO-qualified technicians are trained in the identification, handling, defusing, and classification of UXO items including MEC and material potentially presenting an explosive hazard (MPPEH).

UXO is defined as military munitions that have been primed, fused, armed, or otherwise prepared for action and have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to the operations, installations, personnel, or material, and remain unexploded either by malfunction, design, or any other cause. UXO, if disturbed, (touched, picked up, played with, kicked, thrown, etc.) may explode without warning, making it potentially hazardous.

For the purpose of this SSHP and the GMP, MPPEH and MEC items will be considered UXO, and treated as such. Sampling activities contained within the OB/OD area has a high potential for encountering MEC and are readily apparent on the ground surface in many places within the OB/OD Areas. The remaining areas of FWDA and off-site locations have a low potential for encountering MEC.

### **3.5 General MEC Work Procedures**

For all site activities within the EZ, or areas potentially containing MEC, the procedures and practices listed below shall be strictly enforced.

- UXO-qualified technicians are to be on-site at all times during field activities within areas potentially containing MEC.
- MEC will be identified by the UXO-qualified technicians.
- Only the minimum number of personnel required to perform a given activity within the EZ will be involved in the operation.
- Movement and handling of MEC will be not permitted at any time.
- Non-UXO-qualified personnel shall receive site-specific MEC recognition training prior to entering and performing work in the EZ.
- Personnel who will be working in areas potentially containing MEC items will not wear inner or outer garments having static electricity-generating characteristics while in the EZ.

- Only UXO-qualified personnel will be involved in the investigation, identification, and marking of known or potential MEC items.
- No smoking, or possession or use of open flame or spark producing sources will be allowed in the EZ. Unless the task performed requires the use of open flame or a spark producing source, then the SSHO or team leader may approve possession or use only in designated areas.
- Personnel will not attempt to extinguish burning explosives or any fire that might involve explosive materials.
- Personnel will stay on roads and paths designated by UXO-qualified staff.

## **4.0 Physical Hazards**

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Based on the nature of the planned site operations, the potential and risk for exposure to physical hazards is high for this project. Physical hazards that may be encountered during site operations are addressed in the following sections.

### **4.1 Thermal Stress**

Due to the varied climate changes at site projects, thermal stress can pose a major health and safety concern for any site project. Other adverse weather conditions (such as wind and blowing dust, rain, and snow) can cause workers to be distracted, irritable, and error-prone. Heat stress injuries are commonly exhibited through one or more of the following symptoms: heat rash, heat cramps, heat exhaustion, and heat stroke. Cold stress injuries are commonly exhibited through symptoms of either hypothermia and/or frostbite.

#### **4.1.1 Heat Stress**

Heat stress is caused by a number of interacting factors, including environmental conditions, clothing, workload, and the individual characteristics of the worker. Extremely hot weather can cause physical discomfort, loss of efficiency, or personal injury. Because heat stress is probably one of the most common illnesses at a site, regular preventive measures are vital. Individuals vary in their susceptibility to heat stress.

Personnel (including subcontractor employees) potentially exposed to heat stress conditions will be made aware of the sources of heat stress, how the body handles heat, heat-related illnesses, preventive/corrective measures, and first-aid procedures.

#### **Signs and Symptoms of Heat Stress**

If the body's physiological processes fail to maintain a normal body temperature because of excessive heat, a number of physical reactions can occur ranging from mild to fatal.

Heat-related problems include the following:

- Heat Rash—Caused by continuous exposure to heat and humidity and aggravated by chafing clothes. Heat rash decreases the body’s ability to tolerate heat as well as being a nuisance.
- Heat Cramps—Caused by profuse perspiration with inadequate electrolytic fluid replacement. Heat cramps cause painful muscle spasms and pain in the extremities and abdomen.
- Heat Exhaustion—Caused by increased stress on various organs to meet increased demand to cool the body. Heat exhaustion causes shallow breathing; pale, cool, moist skin; profuse sweating; and dizziness. Heat exhaustion can be alleviated by promptly moving the affected individual to a cool place to lie down and by providing cool fluids to drink.
- Heat Stroke—The most severe form of heat stress. Heat stroke symptoms include hot, dry skin; no perspiration; nausea; dizziness; confusion; strong, rapid pulse; and coma. The body must be cooled immediately to prevent severe injury or death.

### **Heat Stress Prevention**

One or more of the following practices will help reduce the probability of succumbing to heat stress:

- Acclimate workers to heat conditions when field operations are conducted during hot weather.
- Provide plenty of liquids to replace the body fluids lost by perspiration. Fluid intake must be forced because, under conditions of heat stress, the normal thirst mechanism is not adequate to bring about a voluntary replacement of lost fluids.
- If possible, install mobile showers or hose-down facilities to reduce body temperature and cool protective clothing.
- If possible, conduct field operations in the early morning.
- Train personnel to recognize the signs and symptoms of heat stress and its treatment.
- Rotate personnel to various job duties if possible.
- Provide shade or shelter to relieve personnel of exposure to the sun during rest periods.

Individuals succumbing to the symptoms of heat-stress shall notify the SSHO immediately. At the onset of heat stress, the aforementioned prevention practices no longer apply. Activities will be halted, and treatment will be initiated. Early detection and treatment of heat stress will prevent further serious illness or injury and lost work time. Proper and effective heat stress treatment can prevent the onset of more serious heat stroke or exhaustion conditions. Individuals that have succumbed to any heat-related illness become more sensitive and predisposed to additional heat stress situations.

### **Heat Stress Monitoring**

Operations that involve worker exposure to high air temperatures, radiant heat sources, high humidity, and direct contact with hot objects or strenuous activities have a high potential for heat



stress. With the use of PPE, the potential for inducing heat stress is exacerbated further. Depending on the planned work activities and the protective clothing anticipated, the heat stress potential must be considered at ambient temperatures at or above 70 degrees Fahrenheit (°F).

### **Individual Monitoring**

Every worker who works in extraordinary conditions that increase the risk of heat stress should be personally monitored. Personal monitoring can be performed by checking the heart rate, recovery heart rate, oral temperature, or extent of body water loss.

To check the heart rate, count the radial pulse for 30 seconds at the beginning of the rest period. If the heart rate exceeds 110 beats per minute, shorten the next work period by one third and maintain the same rest period. The recovery heart rate can be checked by comparing the pulse rate taken at 30 seconds (P1) with the pulse rate taken at 2.5 minutes (P3) after the rest break starts.

Oral temperature can be checked with a clinical thermometer after work but before the employee drinks water. If the oral temperature taken under the tongue exceeds 37.6 degrees Celsius (°C), shorten the next work cycle by one third. Thermometers that estimate the deep body temperature by measuring the temperature in the ear canal are not considered to be sufficiently accurate to estimate the body core temperature reliably. According the American Conference of Governmental Industrial Hygienists, no worker should be permitted to work when their deep body temperature exceeds 38°C (100.4°F)

Body water loss can be measured by weighing the worker on a scale at the beginning and end of each workday. The worker's weight loss should not exceed 1.5% of total body weight in a workday. If a weight loss exceeding this amount is observed, fluid intake should increase.

#### **4.1.2 Cold Stress**

Most cases of cold stress develop in air temperatures between 30°F and 50°F. People who are exposed to lower temperatures are at risk for injuries ranging from frostbite to serious loss of body heat, which could result in brain damage or death.

Employees should be protected from exposure to cold so that their core body temperature does not fall below 96.8°F. Core body temperatures below this level will likely result in reduced mental alertness, reduction in rational decision making, or loss of consciousness with the threat of fatal consequences.

Under cold conditions, blood vessels in skin, arms, and legs constrict, decreasing blood flow to extremities. This minimizes cooling of the blood and keeps critical internal organs warm. At very low temperatures, however, reducing blood flow to the extremities can result in lower skin temperature and higher risk of frostbite.

Personnel (including subcontractor employees) potentially exposed to cold stress conditions will be made aware of the signs and symptoms of cold stress, precautionary measures, training, preventive/corrective measures, and first-aid procedures

## **Signs and Symptoms of Cold Stress**

Several factors increase the harmful effects of cold including, drinking caffeinated or alcoholic beverages, smoking, fatigue, emotional stress, certain diseases, medications, wet clothing, having wounds or fractures, and being very young or old. The two most prominent adverse effects from exposure to cold temperatures are frostbite and hypothermia. Treatment for cold related injuries should be administered by a person qualified in first aid or a professional medical provider.

## **Hypothermia**

Hypothermia is the most severe form of cold stress and results from a drop in the body's core temperature. The initial signs include; shivering, numbness, confusion, weakness, impaired judgment, impaired vision, and drowsiness. Hypothermia victims typically progress through five stages of the condition including; (1) shivering, (2) apathy, (3) loss of consciousness, (4) decreasing pulse and breathing rate, and (5) death.

**Hypothermia Signs and Symptoms.** When the body can no longer maintain core temperature by constricting blood vessels, it shivers to increase heat production. Maximum severe shivering develops when the body temperature has fallen to 95°F.

The most critical aspect of hypothermia is the body's failure to maintain its core temperature. Lower body temperatures present the following signs and symptoms:

- Persistent shivering--usually starts when core temperature reaches 95°F
- Irrational or confused behavior
- Reduced mental alertness
- Poor coordination, with obvious effects on safety
- Reduction in rational decision-making

In addition, acute exertion in cold can constrict blood vessels in the heart. This is particularly important for older workers or workers with coronary disease, who may have an increased risk of heart attack.

## **Hypothermia – Stages**

**Mild Hypothermia.** The early signs of hypothermia include the following:

- Shivering
- Blue lips and fingers
- Poor coordination

**Moderate Hypothermia.** The next stage of hypothermia includes the following signs:

- Mental impairment
- Confusion
- Poor decision-making
- Disorientation
- Inability to take precautions from the cold
- Heart slowdown
- Slow breathing

**Severe Hypothermia.** In this advanced stage, hypothermia resembles death. Patients must be treated as though they are alive. The symptoms of severe hypothermia includes the following signs:

- Unconsciousness
- Heart slowdown to the point where pulse is irregular or difficult to find
- No shivering
- No detectable breathing

**Hypothermia - First Aid.** To treat hypothermia, stop further cooling of the body and provide heat to begin rewarming.

- Carefully remove the affected individual to shelter. Sudden movement or rough handling can upset heart rhythm.
- Keep the affected individual awake.
- Remove wet clothing and wrap the affected individual in warm covers.
- Rewarm neck, chest, abdomen, and groin, but do not warm extremities.
- Apply direct body heat or use safe heating devices.
- Give warm, sweet drinks, if the affected individual is conscious.
- Monitor breathing. Administer artificial respiration if necessary.
- Call for medical help or transport the affected individual to the University of New Mexico Hospital.

#### **4.1.3 Frostbite**

Frostbite is the most common injury caused by exposure to cold temperatures. It occurs when cells of the body freeze restricting blood flow and causing tissue damage. Frostbite is a common injury caused by exposure to severe cold or by contact with extremely cold objects. Frostbite occurs more readily from touching cold metal objects than from exposure to cold air because heat is rapidly transferred from skin to metal. Body parts most commonly affected by frostbite are face, ears, fingers, and toes. When tissue freezes, blood vessels are damaged. This reduces blood flow and may cause gangrene. Frostbite symptoms vary, are not always painful, but often include a sharp, prickling sensation.

## Signs and Symptoms of Frostbite

The first sign of frostbite is slightly flushed skin which then changes to white or grayish yellow and finally grayish blue. Pain is sometimes initially felt but is often followed by a cold numb feeling. Once tissues become hard, the case is a severe medical emergency. Severe frostbite results in blistering that usually takes about ten days to subside. Once damaged, tissues will always be more susceptible to frostbite in future.

**Frostbite - First Aid.** To treat frostbite, exposure to the cold must be halted and the frostbitten area slowly and gently warmed. Treatment includes the following:

- Do not begin warming the affected areas if the individual may be re-exposed to the cold.
- Warm frostbitten area gradually with body heat. Do not rub.
- Do not thaw hands or feet unless medical aid is distant and there is no chance of refreezing. Parts are better thawed at a hospital.
- Apply sterile dressings to blisters to prevent breaking.
- Get medical attention.

## Precautionary Measures

To maintain core temperatures above 96.8°F when working in air temperatures below 40°F, employees should wear insulated clothing. This protective clothing may include, but is not limited to:

- Layers of clothing with an air space between the body and the outer layer of clothing to help retain body heat.
- Insulated suits, such as whole-body thermal underwear.
- Wool or polypropylene socks
- Insulated gloves and boots
- Insulated head cover, such as knit caps, hard-hat liners, etc.

When conducting work in air temperatures below 35°F, the following practices shall be followed:

- If the clothing of an employee is expected to become wet, the outer layers of clothing must be impermeable to water.
- If an employee's underclothing becomes wet it must be changed immediately. If the clothing becomes wet from sweating, the employee may finish the task that caused the sweating before changing into dry clothing.
- Consumption of hot liquids, such as soups, warm drinks, etc. shall be encouraged. The intake of caffeine containing products shall be discouraged due to their diuretic and circulatory effects.
- The buddy system shall be practiced. Any employee observed with signs of cold stress shall immediately proceed to the break area.

- Employees will be reminded to layer their clothing, i.e., wear thinner, lighter clothing next to the body with heavier clothing layered outside the inner clothing.
- Avoid overdressing when going into warm areas or when performing activities that are strenuous. This could potentially lead to heat stress situations.
- Auxiliary heated versions of handwear, footwear, etc., can be used in lieu of mittens, insulated socks, etc. if extremely cold conditions exist.
- Work shall be arranged in such a way that sitting still or standing for long periods is minimized.
- If the air temperature is 20°F or below the hands shall be protected by mittens or gloves prior to contact with cold surfaces such as metal, etc.
- Keep dry. Wetness greatly increases the chance of cold stress. Always have extra clothing available if there's a chance you could get wet. Keep your feet dry, they are very susceptible to frostbite.
- Take a break. If you become fatigued during physical activity, your body loses its ability to properly retain heat. This causes rapid cooling which can quickly lead to cold stress. When you take a break, be sure to replace lost fluids and calories by drinking warm, sweet, caffeine-free nonalcoholic drinks and soup.
- Learn the symptoms of cold stress. The effects of cold stress may not be apparent to its victim. The first symptoms of hypothermia are uncontrollable shivering and the sensation of cold. The heartbeat slows and may become irregular, and the pulse weakens. As the condition worsens, severe shaking or rigid muscles may be evident. The victim may also have slurred speech, memory lapses, and drowsiness. Cool skin, slow, irregular breathing, and exhaustion occur as the body temperature drops even lower. This is a serious condition requiring immediate medical attention.

#### 4.1.4 Wind Chill

Air temperature is not the only factor to be considered while evaluating cold stress situations. Wind-chill involves the combined effect of air temperature and air movement. Wind-chill cooling rate is defined as heat loss resulting from the effects of air temperature and wind velocity upon exposed skin. Wind chill cooling rate and the cooling power of air are critical factors. The higher the wind speed the greater the risk of experiencing cold related injuries.

Table 4-1: Wind Chill Table Table 4-1 compares the effects of air temperatures with and without wind. For example, when the air temperature is -20°F there is little danger of flesh freezing with no wind, increased danger with a wind of 5 miles per hour (mph), and extreme danger with a wind of 25 mph or more. For exposed skin, continuous exposure should not be permitted when the air speed and temperature result in an equivalent chill temperature of -25°F or less. Table 4-1: *Wind Chill Table* can be used to help assess hazardous conditions attributable to wind chill effects.

### 4.1.5 Training

Training on the contents of this portion of the SSHP will be conducted during tailgate safety meetings held at project or office locations where employees are exposed to cold temperatures. Topics to be discussed during this training will include:

- Proper rewarming procedures and first aid treatment of cold related cases
- Proper clothing practices
- Eating and drinking habits
- Recognition of signs and symptoms of cold stress
- Safe cold weather work practices

**Table 4-1: Wind Chill Table**

Actual Temperature Reading (°F)	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
Estimated Wind Speed (mph)	<b>Equivalent Chill Temperature (°F)</b>											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
(Wind speeds greater than 40 mph have little additional effect.)	LITTLE DANGER In under an hour with dry skin. Maximum danger is false sense of security.			INCREASING DANGER Danger from freezing of exposed flesh within one minute.				GREAT DANGER Flesh may freeze within 30 seconds.				
<b>Note: Trenchfoot and immersion foot may occur at any point on this chart.</b>												

## 4.2 Slip, Trip, and Fall Hazards

Due to the steep and uneven terrain, debris, improperly stored tools/equipment, open trenches and/or soil boring holes, the majority of site activities present some form of slip, trip, and or/fall hazards to site personnel. It should also be noted that there may be many rodent (prairie dog, snakes, and other animals) burrows adding to such hazards; however, the burrows will not necessarily be marked. Resulting injuries can include contusions, abrasions, twisted ankles/wrists, sprained backs, pulled muscles, and broken bones.

**Control(s).** When walking in steep terrain, look for stable places to step into. Keep the body's center of gravity low and near the hillside. Good housekeeping, including cleaning up of spills in a timely manner, shall be practiced at all times by site personnel to reduce potential for slip, trip, and fall hazards. This includes site cleanup, plant and brush removal, and other improvements as necessary. Open trenches, boring holes, and other significant slip/trip hazards need to be identified by the SSHO and clearly marked, or barricaded during performance of project activities to the extent feasible. All equipment (e.g., hand tools, monitoring equipment) shall be properly stored when not in use.

## 4.3 Cut and Abrasion Hazards

Cuts and abrasions can result from numerous site activities, including handling equipment, inadvertently striking sharp edges of equipment, use of knives, hand augers, lifting manhole covers.

**Control(s).** Site personnel need to wear appropriate gloves, exercise caution when working near equipment with sharp edges, and request assistance when handling large and/or cumbersome objects. When using knives, site personnel need to cut away from the body whenever possible.

## 4.4 Inclement Weather

Inclement weather such as severe thunder/lightning storms and high winds can have a significant impact on personnel safety and the safe performance of site operations. Site personnel will be briefed each morning to inform them of any potential weather hazards that may be present during the day and will remain alert to the onset of inclement weather. The hazards associated with inclement weather include:

- **Heavy Rain:** Heavy rain can create working and driving hazards of which site personnel should be aware. This includes the increase in slip and fall hazards due to slick walking surfaces, and reduction in visibility. Additionally, heavy rains can cause flash flooding in low-lying areas and creek and river areas. In the event that heavy rains occur while personnel are outside, the SSHO will advise the teams to halt operations and instruct personnel to seek shelter. The determination to re-start operations will be the

responsibility of the PM who will consult with the SSHO to ensure site conditions are safe for re-entry and continuation of operations.

- **Thunderstorms:** Thunderstorms, with their associated lightning, present a significant hazard to site personnel. A severe thunderstorm watch indicates that severe thunderstorms are possible in and close to the watch area. A severe thunderstorm warning indicates that a severe thunderstorm has been spotted and is going to move through the area soon. Work may continue at the work site during severe thunderstorm watches; however, site work shall cease and the work zone will be evacuated during a thunderstorm or severe thunderstorm warning. Additionally, work will be halted by the SSHO if lightning is detected within ten miles of the team locations.
- **High Winds:** High winds can create conditions that threaten the safety and health of site personnel, and if coupled with low humidity, can create a static electricity hazard. High winds can cut visibility by creating dust clouds and can cause trees and tree limbs to fall. The SSHO will determine when wind levels present a hazard to site personnel and will call for the evacuation of the work areas if deemed necessary. The determination to restart operations will be the responsibility of the PM in consultation with the SSHO to ensure site conditions are safe for re-entry and continuation of operations.
- **Tornados:** Tornados with their associated high winds, rain, and potentially damaging hail can create serious threats to personnel on site. If a tornado watch is reported, conditions are favorable over a large area for severe thunderstorms and tornadoes to develop, and the SSHO will notify all personnel of the danger. In the event that a tornado watch is upgraded to a tornado warning, a tornado has been detected or seen, is on the ground, moving, and is expected to move through the affected area soon. If a tornado warning is sounded, the SSHO will instruct personnel to evacuate the site immediately and take cover. Environmental clues to look for include: dark, often greenish sky; large hail; a wall of clouds; and a loud roar, similar to a freight train.

All of these weather conditions present significant hazards to personnel due to windblown debris, drowning, and/or electrocution. Resulting injuries can include contusions, abrasions, thermal/electrical burns, broken bones, and possibly death. Site equipment can also be damaged due to high winds, flying debris, and/or lightning strikes.

**Control(s).** The best protection against most severe weather episodes is to avoid potential exposure. This avoidance means seeking shelter before the storm hits. Stay away from pipes and electrical equipment should lightning be a threat, and watch for damage caused by lightning strikes nearby. The SSHO shall monitor/observe weather conditions and determine if work activities are to be altered and/or suspended. The SSHO in consultation with the FTL will decide what operations, if any, are safe to perform based on existing conditions and anticipated conditions.



## 4.5 Use of Hand Tools Hazards

Use of hand tools, including scrapers and brushes, and electric/fuel-powered tools can present many hazards, including cuts, piercing of skin, flying debris, pinching, soft tissue damage (e.g., eye injuries), contusions, and dismemberment.

**Control(s).** Site personnel are to ensure that tools being used are in good working order and that all required shields, guards, and safety devices are in place. When using knives, or similar tools, site personnel should perform cutting motions away from the body whenever possible.

## 4.6 Material Handling Hazards

Material handling can include lifting of equipment, water coolers, trash, and/or debris. Handling of materials can present numerous hazards, including slips/trips/falls, strains, and sprains. Back injuries are of particular concern due to their potential for long-term, or permanent, disability.

**Control(s).** Site personnel need to use safe lifting procedures when handling materials (e.g., keep back straight, don't twist upper torso while lifting/carrying, and ask for assistance for lifting of heavy items). Site personnel should also plan travel path prior to initiating work.

## 4.7 Noise Hazards

Operation of electrical generators and heavy equipment can be significant sources of hazardous noise. Depending upon the noise intensity, and duration of exposure, site personnel may incur temporary and/or permanent hearing loss. Note: If normal speech is impeded between two individuals approximately 3 feet apart, hearing protection is needed.

**Control(s).** The SSHO shall perform noise surveys as required to determine where hearing protection is required and what type of hearing protection is to be worn (e.g., ear plugs, ear muffs). The SSHO shall also coordinate installation of appropriate postings to advise site personnel of potential noise exposure hazard(s). Site personnel shall advise the SSHO of any potential noise exposure concerns.

## **5.0 Biological Hazards**

The FWDA location in the desert southwest presents several hazards associated with indigenous biological species. The SSHO will inform site personnel during tailgate safety briefings as to the potential biological hazards that may be encountered.

### ***Poison Oak and Ivy***

Poison ivy, poison oak, and poison sumac are identified by three or five leaves radiating from a stem. Poison ivy is in the form of a vine while oak and sumac are bush-like. All produce a delayed allergic hypersensitivity. The plant tissues have an oleoresin, which is active in live, dead, and dried parts. The oleoresin may be carried through smoke, dust, contaminated articles, and the hair of animals. Symptoms usually occur 24 to 48 hours after exposure resulting in burning or stinging, and weeping and/or crusted blisters. Should exposure to any of these plants occur, first wipe the affected area with rubbing alcohol then wash the affected area with a mild soap and water. Do not scrub the area. The best antidote for poisonous plants is recognition and avoidance.

There are products available over the counter designed for application before exposure and after potential exposure to toxic plants. Some prevent the plant oleoresin from contacting the skin, some are used after potential exposure to wash the skin, and others are used to treat symptoms of exposure. The use of these creams is not required, as some may be sensitive to such products. In extreme cases, prescription steroids may be used to reduce the allergic reaction.

The SSHO will be notified of the presence of such plants and the use of upgraded PPE will be considered

### ***Animal Hazards***

Several poisonous invertebrates and reptiles are found within FWDA. These include scorpions (which live under rocks and debris), fire ants (which live in large mounds of dirt or sand on the land surface), and rattlesnakes (which may be found in burrows, heavy brush, and under rocks, logs or debris). To avoid these animals, field personnel will be instructed to not pick up or roll boulders or logs with hands or feet. Personnel will also be instructed to stay away from large mounds of dirt or sand (potential fire ant hills). Similarly, reaching into burrows, heavy brush or other debris where these animals hide will not be permitted. If the investigation requires entering areas where these animals could live or be hiding, caution should be used to prevent bites or stings.

Mammals such as mountain lions, feral dogs, and other wildlife are also present and may pose a potential threat to personnel under certain conditions. Efforts should be made to avoid wildlife on the site to avoid aggressive acts by the animals.

## ***Ticks***

Rocky Mountain Spotted Fever (RMSF) is a disease transmitted by ticks and occurs during spring, summer, and fall. This disease is transmitted via the bite of an infected tick. The tick must be attached 4 to 6 hours before the disease-causing organism (*Rickettsia rickettsii*) becomes reactivated and can infect humans.

The primary symptom of RMSF is the sudden appearance of a moderate to high fever. The fever may persist for two to three weeks. The victim may also have a severe headache, deep muscle pain, and chills. A rash appears on the hands and feet on about the third day and eventually spreads to all parts of the body. For this reason, RMSF may be confused with measles or meningitis. The disease may cause death if untreated, but if identified and treated promptly, death is uncommon.

**Control(s).** Tick repellent containing diethyltoluamide (DEET) should be used in tick infested areas, and pants legs should be tucked into boots. In addition, workers should search the entire body every three or four hours for attached ticks. Ticks should be removed promptly and carefully without crushing, since crushing can squeeze the *Rickettsia* into the skin. A gentle and steady pulling action should be used to avoid leaving the head or mouth-parts in the skin. Hands should be protected with surgical gloves when removing ticks.

## ***Hantavirus***

Hantavirus is a disease of the respiratory system, which was first identified in the southwestern United States in 1993. A number of cases of the disease have been diagnosed in the area surrounding FWDA. The disease is a response to inhalation of rodent saliva, urine and feces in an aerosol form. Disease transmission may also occur when these dried materials are ingested, contacted with the eyes, or absorbed through cuts and breaks in the skin. The disease results in fever, muscle pain, coughing, and acute respiratory distress. Approximately 100 cases have been confirmed in 12 states since the disease was first identified in 1993. Of this number, at least 26 infected individuals died. This virus has been classified as a biosafety level four (the maximum level) agent for viral growth research. Personnel may also come in contact with rodents and their excrement in buildings, toolboxes, and vehicles. Personnel will not attempt to pick up or capture rodents to reduce the risk of being bitten. Rodent nests and droppings in buildings should be disinfected with a commercial disinfectant containing hypochlorite, detergent, or ethyl alcohol. Personnel will minimize dust generation and will not dry sweep or vacuum in areas of suspected rodent activity.

## **6.0 Training Requirements**

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All personnel assigned to, or regularly entering the project site, shall receive the training required in this section prior to participation in assigned site activities that pose a potential for exposure to safety or health hazards. Site personnel shall also receive the training outlined in this section as applicable to their assigned duties. Documentation of relevant training will be maintained at the Sundance field office and at the Sundance Albuquerque office.

All UXO field personnel shall comply with the engineering manual (EM) 1110-1-18 and be credentialed in accordance with DDESB TP 18. All personnel will be fully trained and capable of recognizing the specific hazards of the procedures being performed.

### **6.1 General Training**

The SSHO will be responsible for informing all personnel performing on-site activities and all visitors of the contents of this SSHP and ensuring that each person signs the SSHP acknowledgment form before any activities on-site are conducted. By signing this form, individuals recognize the hazards present on the site and the policies and procedures required minimizing exposure to hazards or adverse effects caused by hazards. Documentation of certification of training requirements will be reviewed by the SSHO provided to the FTL, and filed with the project files. Untrained employees may be restricted from sites where the potential for exposure exists as determined by the SSHO or OESS. All field personnel will be trained according to the requirements in Title 29 CFR 1926.65 before their initial assignment to any field project.

### **6.2 40-Hour General Site Worker Training**

All Sundance and subcontractor personnel with the potential for exposure to hazardous substances or other safety and health hazards during the course of this project must obtain 40-hours of off-site HAZWOPER training. This training must be completed, and documentation presented, before personnel are to participate in site activities involving exposure to site hazards.

### **6.3 Supervised Field Experience**

Personnel will receive a minimum of three days actual field experience under the direct supervision of a trained, experienced supervisor. This training will be used to familiarize site personnel with the site-specific organization, PPE, and emergency response procedures. This supervised field experience will be documented and maintained within the respected personnel files.

## **6.4 8-Hour Annual Refresher Training**

All Sundance and subcontractor personnel, to include management/supervisory personnel shall receive a minimum of eight-hours of refresher training annually. This training will cover relevant topics from the 40-hour HAZWOPER and the eight-hour management/supervisor courses, as well as critiques of any incidents that have occurred in the past year and any other related topics.

## **6.5 Tailgate Safety Meetings**

The SSHO or the Field Team Lead will conduct a tailgate safety meeting for all personnel at the beginning of each work shift or whenever new employees arrive at the job site once the job commences. The topics discussed at the tailgate safety meeting will include H&S considerations for the day's activities, necessary PPE, problems encountered, and new operations. Attendance records and meeting notes will be maintained with the project files. At the conclusion of each shift, a debriefing for site employees will be held, if necessary.

## **6.6 Initial MEC Training**

Initial MEC training shall be provided by the OESS to all personnel prior to engaging in field operations. The intention of the initial MEC training is to prepare a previously untrained person to recognize UXO and to properly respond to the discovery of UXO.

## **6.7 Site-Specific Information Training**

Sundance will provide site-specific training for all personnel assigned to projects falling within the GMP and application of 29 CFR 1926.65. The content of the training will be derived from information contained within this SSHP. All workers must also read and sign the SSHP acknowledging acceptance of site rules and understanding of site hazards before being permitted to enter an EZ. Emergency procedures will be reviewed during this training.

## **6.8 Visitor Training**

Site access by delivery or repair personnel, public or government officials, visitors, or local residents will be limited to support areas only. These persons will not be required to comply with the medical and training requirements as previously defined. Authorized visitors will be briefed on the hazards present at that location by the SSHO or OESS. All visitors will be escorted at all times. Visitors will be responsible for compliance with the requirements specified in this SSHP.

## **6.9 Hazard Communication**

In order to comply with the OSHA Hazard Communication (HazCom) Standard 29 CFR 1910.1200 and to ensure that site personnel are informed of the hazards associated with the

materials with which they work, the following requirements will apply to all commercial products containing hazardous substances that are brought on site:

- Material Safety Data Sheets (MSDS) will be maintained for any product containing a hazardous substance that will be used on site.
- All containers not supplied with adequate hazard labeling will have a hazard communication label affixed to the container detailing the health and physical hazards associated with the material.
- All personnel, including subcontractors who work with products containing hazardous substances, will be trained in accordance with the requirements of 29 CFR 1910.1200.
- An inventory of all products containing hazardous substances used on site will be maintained.

This training shall be provided upon initial assignment to the site and prior to use of the product. Supplemental HazCom training shall be scheduled and presented whenever a new hazardous substance is introduced into the work area or an employee changes job location where new products are encountered.

## **6.10 First Aid and Cardiopulmonary Resuscitation**

At least two persons trained in both 1) American Red Cross first-aid techniques and 2) cardiopulmonary resuscitation (CPR) will be on site whenever MEC activities occur. Refresher training in CPR is required every year and every three years for first aid. Medical support will be provided on site by first-aid and CPR-qualified first responders until emergency responders arrive to the site.

## **6.11 Bloodborne Pathogen Training**

The Sundance first aid-trained personnel will primarily be responsible for rendering aid in the event of an injury or accident. The first aid/CPR trained personnel who have a potential for occupational exposure to blood or other potentially infectious body fluids shall receive training as outlined in the 29 CFR 1910.1030(g)(2). Whenever feasible, all on-site Sundance personnel will receive the same level of blood borne pathogen (BBP) training as specified above.

## **7.0 Personal Protective Equipment**

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This section provides guidelines for selection of appropriate PPE in accordance with 29 CFR 1910.120 (g) (5), 1910.132, and 1910.134. Environmental and personal monitoring will be conducted to identify health hazards to determine the appropriate level of employee protection needed.

## 7.1 Levels of Protection

The following is a brief description of the PPE that will be required during GMP activities. The OSHA terminology for protective equipment will be used: Levels A, B, C, and D. Where foot traffic and proximity to earth-moving equipment is required; all personnel will be required to wear reflective traffic vests or other reflective clothing as specified by the SSHO.

### ***Level A Protection***

Level A protection is not anticipated for the GMP scope of work. Should the scope of work change such that a fully encapsulated suit worn over self-contained breathing apparatus (SCBA) or supplied air respirator with escape SCBA would be required, work will be suspended and the HSM, SSHO, and COR shall be notified prior to initiating any change in PPE to this level.

### ***Level B Protection***

Level B protection is not anticipated for the GMP scope of work. Should the scope of work change such that a full face-piece SCBA or supplied air respirator with escape SCBA worn with hooded chemical resistant clothing would be required, work shall be suspended and the HSM and SSHO shall be notified prior to initiating any change in PPE to this level.

### ***Level C Protection***

While not anticipated during the performance of this project, Level C protection is defined here in the event a change in PPE ensemble is required by changed circumstances or conditions. This level of protection shall consist of the following minimum ensemble:

- Full-face air-purifying respirator with appropriate cartridge as determined after consultation with the HSM and SSHO
- Tyvek coveralls with elastic wrists/ankles (polycoated as determined by SSHO)
- Safety-toed chemical resistant boots
- Latex or nitrile inner gloves
- Nitrile outer gloves
- Surgical scrubs or coveralls
- Hearing protection as required
- Hard hat
- Wrists and ankles taped to minimize entry of contaminants
- Cooling device as necessary

### ***Level D Protection***

Level D PPE shall be used where no skin hazards such as poison oak are present. Level D PPE shall consist of the following, at a minimum:

- Street clothes or coveralls (to include long pants/trousers and sleeved shirts)
- Safety-toed work boots
- Safety glasses
- Hearing protection (if necessary)
- Splash shield (if necessary)
- Hardhat (to be used if there is an overhead hazard)
- Leather work gloves
- Nitrile gloves during groundwater sampling
- Reflective safety vest

If additional skin protection from poisonous plants, decontaminating operations, and/or other water sampling related activity is required, then the above Level D PPE ensemble will be supplemented to a modified Level D PPE.

## 7.2 Emergency Response Equipment

Emergency and first aid equipment will be available at all times. The team support vehicle will be designated as an emergency vehicle and as a safe haven. Table 6-1: *Emergency Response Equipment* presents a list of emergency and first aid equipment needed on site.

**Table 7-1: Emergency Response Equipment**

Emergency Equipment	Number per Location	Location Stored
Nitrile gloves (100 count box)	2	Field Vehicle
Emergency blankets (reflective)	2	Field Vehicle
First-Aid Kit (w/blood-borne pathogens)	1	Field Vehicle, Field Station
Fire extinguisher (Type ABC)	1	Field Vehicle
Portable eye wash kits	1	Field Vehicle, Field Station
Burn kits with bandages	1	Field Vehicle
Trauma bandages (packages)	1	Field Vehicle
Safety flagging/caution tape	1	Field Vehicle
Sunscreen (minimum SPF 30)	1	on person



## **8.0 Medical Surveillance**

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Sundance field personnel participate in a Medical Surveillance Program (MSP) designed to assist in the prevention, diagnosis, and treatment of occupational illnesses and injuries sustained during operations on hazardous waste sites. This program is initiated when the employee starts work with a complete physical and medical history and is continued on a regular basis. The medical surveillance requirements of this section shall apply to all site personnel with exposure potential to significant safety and health hazards.

### **8.1 General Requirements**

Medical examinations of personnel as required by the MSP shall be conducted by, or under the supervision of, a licensed physician, who is board-certified in occupational medicine or has had extensive experience in the recognition, evaluation, and treatment of occupational diseases.

#### ***Physicians Statement***

Upon completion of a health assessment, the physician shall provide the results of the examination to the employee, and a written physician's statement shall be provided to Sundance. The physician's statement shall, as a minimum, include the following:

1. The employee's name and social security number;
2. A statement that the employee is qualified to participate in HTRW-related site activities;
3. The physician's recommended limitations upon the employee's assigned work, if any; and
4. Any supplemental or follow-up examinations or tests, which the physician believes are required to complete the assessment

### **8.2 Subcontractor Requirements**

Subcontractors who may be required to work in an EZ will certify that all their employees have successfully completed a physical examination by a qualified physician. The physical examinations will meet the requirements of 29 CFR 1926.65. Subcontractors will also supply copies of the medical examination clearance certificate for each employee they have on site.

### **8.3 Personnel Medical Records**

Medical and personal exposure monitoring records will be maintained according to the requirements of 29 CFR 1926.65 and will be kept for a minimum of 30 years. Confidentiality of employee medical records will be maintained. The written medical opinion from the occupational physician will be made available upon request to the USACE representative for any site worker.

### **8.4 Medical Restrictions**

When a medical care provider identifies a need to restrict work activity, the employee's home office will communicate the restriction to the employee, the FTL, and the SSHO. The terms of

the restriction will be discussed with the employee and the SSHO. Every attempt will be made to keep the employee working, while not violating the terms of the medical restriction.

## 9.0 Exposure Monitoring/Air Sampling Program

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On-site monitoring will be conducted during specified site activities to evaluate potential hazards that may be encountered. The on-site monitoring will assist in determining the effectiveness of control measures, the need for upgrading or downgrading PPE requirements, and the effectiveness of standard work procedures. Direct-reading, real-time instruments will be used whenever possible, or required, to detect and qualify site hazards. If a reading is achieved which exceeds the action levels specified in the following sections, the SSHO shall take the steps outlined in this section, or other referenced sections, to correct the situation or minimize the exposure.

### 9.1 Personal Monitoring Requirements

Monitoring frequency may be escalated or reduced by the HSMError! Bookmark not defined. based upon the results of previous monitoring or the detection of factors that indicate a potential for exposure. The monitoring equipment to be used during this project will include:

1. Flame-Ionization Detector/Photo-Ionization Detector (FID/PID) – An FID or PID (or combination FID/PID) will be used to measure volatile organic compounds in the breathing zone.
2. Digital ambient air thermometer - Used to assess heat and cold stress effects in accordance with Section 4.1: *Thermal Stress* of this SSHP.

### 9.2 Breathing Zone Monitoring

The breathing zone will be monitored continuously during sampling activities. This monitoring will be conducted by, or at the direction of, the SSHO and will be used to minimize physiological effects in the event that VOCs are emitted during site activities. A commercially available FID or PID will be utilized to monitor the breathing zone in the workspace surrounding the well location. The FID or PID will also be used to monitor the annular space of the well borehole. The results will be recorded in the project field book.

If a sustained PID/FID reading of 1 parts per million (ppm) or greater is detected for 3 to 5 minutes above background and in the breathing zone (12 inches from the face), work will be halted. The FTL and SSHO will be notified of any sustained readings over 1 ppm. The FTL will contact the USACE Technical Manager and, in coordination with the SSHO, determine a course of action (e.g., upgrading to Level C PPE).

### **9.3 Temperature Extreme Monitoring**

Heat and cold stress monitoring will be conducted in accordance with the guidelines presented in Section 4.0: *Physical Hazards*. This monitoring will be conducted at the direction of the SSHO, or another designated qualified person, and will be used to minimize physiological effects in the event that temperature extremes are experienced during site operations.

### **9.4 Noise Monitoring Procedures**

High noise levels are anticipated during the operation of sampling equipment. Exposures above 85 decibels as recorded in the A-weighted sound level (also known as dBA) will likely be experienced during sampling activities. Noise levels will therefore not be monitored. In place of monitoring, a general hearing protection requirement around this equipment will be enforced. Personnel within 25 feet of generators and compressors during ground water sampling activities will be required to wear

### **9.5 Monitoring Equipment Calibration and Maintenance**

All sampling and monitoring instrumentation used on site will be calibrated and/or response-checked in accordance with the manufacturer's specifications before and after use each day. If an instrument fails to calibrate or respond correctly, it will be removed from service until it can be repaired in accordance with manufacturer's specifications.

## **10.0 Standard Operating Procedures, Engineering Controls, and Work Practices**

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This chapter briefly outlines the engineering controls and general acceptable work practices that will be followed by all site personnel to eliminate or reduce the risk of exposure to the anticipated site hazards. These controls are presented as a guide for site personnel and do not cover all compliance issues. The FTL and SSHO will ensure full compliance with applicable regulatory requirements.

### **10.1 General Work Practices**

General acceptable work practices for the job site include the following:

- Administrative hazard control will be practiced for all site areas by restricting entrance to EZs to essential personnel who are qualified per training, physical exam, and respirator fit test.
- The buddy system will be used at all times by all field personnel.
- Anyone reporting to work under the influence of alcohol and/or illegal drugs will be subject to disciplinary action and termination. Any employee under a physician's care and/or taking prescribed medication must notify the FTL and SSHO.

- Smoking will not be permitted in any area.
- Changes in work practices or work rules will be implemented only after a written safety plan amendment has been prepared and authorized. Changes will be communicated to all site personnel verified by personnel signature.
- Employees will generally be responsible for cleaning and maintaining the protective equipment issued to them. Any noted defects in protective equipment will be reported immediately to the FTL and SSHO.
- Personnel must report all injuries and/or illnesses to their supervisor. This includes minor injuries and near misses.
- Posted danger and warning signs indicating special hazards are to be obeyed at all times.
- Loose or torn clothing ties, scarves, wristwatches, bracelets, rings or other jewelry shall not be worn when they may pose a safety hazard.
- The lifting capacity of mechanical equipment shall not be exceeded.
- Personnel shall be aware of prevailing weather conditions. When there is a threat of lightning, all work operations will cease. If less than 30 seconds elapse between a lightning strike and the sound of thunder, SEEK SHELTER IMMEDIATELY.
- If work is stopped due to thunderstorms and lightning, work will not continue until 30 minutes after the last lightning strike is observed.
- At least one copy of this plan shall be available at the project site, in a location readily available to all personnel, including visitors.
- The location and identification of all underground utilities shall be performed prior to intrusive operations.
- Spark- or flame-producing activities require the initiation of a hot work permit.
- Employees shall not enter confined spaces without authorization from the HSM and implementation of confined space entry procedures.
- Spill prevention and planning contingencies shall be reviewed based on types of spills anticipated.
- Employees will not perform spill containment unless it is safe to do so and appropriate PPE is available and used.

- Handling of drums, containers, or tanks shall not occur unless thorough knowledge of the contents and potential hazards have been evaluated.
- Maintain line-of-sight with a worker during activities that could involve potentially hazardous substances.
- Practice contamination avoidance. Never sit or kneel on potential contaminated ground, never lay equipment on the ground, avoid obvious sources of contamination such as puddles, and avoid unnecessary contact with on-site objects.
- Be alert to any unusual changes in your own condition; never ignore warning signs. Notify on-site SSHO about suspected exposures or accidents.
- A vehicle will be readily available for emergency use. All personnel at the site shall be familiar with the most direct route to the nearest hospital.
- Note wind direction. Personnel shall remain upwind whenever possible during on-site activities.
- Never climb over or under refuse or obstacles.
- Hands and face should be thoroughly washed before eating, drinking, etc.
- Ensure that no one is required to lift more than 60 pounds.
- Legible and understandable precautionary labels that comply with the hazard communication standard shall be affixed prominently to all containers of contaminated scrap, waste, debris, and clothing.
- No food or beverages shall be present or consumed in the exclusion or contamination reduction zones.
- Cosmetics shall not be applied within the EZ or contamination reduction zone.
- All crew personnel on site shall use the buddy system (working in pairs or teams). If protective equipment or noise levels impair communications, then prearranged hand signals shall be used for communication. Visual contact shall be maintained between crew-members at all times, and crew-members must observe each other for signs of toxic exposure. Indication of adverse effects include, but are not limited to:
  - Changes in complexion and skin coloration
  - Changes in coordination
  - Changes in demeanor
  - Excessive salivation and papillary response
  - Changes in speech pattern

- Employees shall inform their partners or fellow team members of nonvisible effects of overexposure to toxic materials. The symptoms of such overexposure may include:
  - Headaches
  - Dizziness
  - Nausea
  - Blurred vision
  - Cramps
  - Irritation of eyes, skin, or respiratory tract

## 10.2 Hot Work Practices

Hot work is not anticipated during the activities described in the GMP.

## 10.3 Electrical Safety Procedures

For this project, no electrical wiring installation is anticipated. However, the use of electrical tools and apparatus will be conducted in accordance with OSHA Standard 29 CFR 1910.137(2). These requirements include, but are not limited to:

- All electrical equipment will be of a type listed by Underwriters Laboratories (UL) or Factory Mutual Engineering Corp. for the specific application.
- Flexible cord passing through work areas will be covered or elevated to protect it from damage by foot traffic, vehicles, sharp corners, or pinching.
- Patched, oil-soaked, worn, or frayed electric cords or cables will not be used.
- Extension cords or cables will not be fastened with staples, hung from nails, or suspended by wire.
- Portable and semi-portable electrical tools and equipment will be grounded by a multi-conductor cord having an identified grounding conductor and a multi-contact polarized plug-in receptacle.
- Semi-portable equipment, floodlights, and work lights will be grounded, and the protective ground will be maintained during moving unless supply circuits are de-energized.
- Tools protected by an approved system of double insulation, or its equivalent, need not be grounded.
- UL listed ground fault circuit interrupters, calibrated to trip within the threshold values of 5 milliamperes  $\pm$  1 milliamperes, are required on all circuits used for portable electric tools.
- Flexible cord sets will be UL listed, contain the number of conductors required for the service plus an equipment ground wire and will be classified as hard usage or extra hard usage (identified by "outdoor" or "WA" printed on the jacket).

## 10.4 Work Procedures in Presence of MEC

For all site activities potentially involving MEC, the procedures and practices listed below, and in Section 3.4: *Munitions and Explosives of Concern*, shall be strictly enforced.

- All MEC will be identified by the UXO-qualified technicians.
- Only the minimum number of personnel required to perform a given MEC related activity will be involved in the operation.
- Movement and handling of MEC will be not be permitted at any time.
- Only UXO-qualified personnel will be involved in the investigation, identification, and marking of known or potential MEC items and explosive materials.
- No smoking, or possession or use of open flame or spark sources will be allowed in the EZ, unless approved by the SSHO, Team Leader, and OESS, and then only in designated areas.
- Non-UXO-qualified personnel shall receive site-specific MEC recognition training prior to participation in site activities.
- Non-UXO-qualified personnel shall not touch or disturb any object that could potentially be MEC-related and shall immediately notify the nearest UXO-qualified technician of the presence of the object.

## 10.5 Use of Products Containing Hazardous Materials

Because of the nature of products used on site and the manner in which they will be used, it is not anticipated that there will be a potential for airborne exposure to the hazardous materials used on site. However, some products used have the potential for skin contact hazards. To help ensure personnel safety from hazardous materials, site personnel will follow the safe work practices listed below:

- To determine the chemical properties of the hazardous materials and the protective measures to be used, all site personnel who use shall personally review the MSDS for each product used.
- All products with airborne exposure hazards (i.e., gasoline and other fuels, spray paints, etc.) will be used outdoors or in well-ventilated areas, and personnel will stand upwind of the dispensing point when dispensing the product.
- When using or dispensing a product with a skin contact hazard, personnel will utilize protective gloves, as identified in Section 9.0: *Personal Protective Equipment* of this SSHP.
- Only those personnel, who have received appropriate HAZCOM training, as outlined in Section 6.9: *Hazard Communication* of this SSHP shall use a product containing hazardous materials.
- Personnel shall immediately wash any affected skin that accidentally comes in contact with a hazardous material identified as being a skin contact hazard.
- Site Control Measures.

To prevent both exposure to unprotected personnel and migration of contamination due to tracking by personnel or equipment, work areas and required personal protective equipment will be clearly defined.

## 10.6 Center of Operations

An existing building in the Administration Area of FWDA, currently Building T-16, will be used as a field office. In the event of a site accident involving the total evacuation of site personnel, the gate to the Administration Area (Gate 109) will act as the primary staging area for accountability, with the field office at Building T-16 serving as a secondary assembly area for the final. The **SZError! Bookmark not defined.** will be located so as to minimize the potential for contaminants to migrate into these locations.

## 10.7 Security Procedures

Project site access and security will be via existing access roads and fences/gates, and augmented as needed with the use of signs and barricades. For site operations Sundance will establish work zones as described below. These work zones will ensure that personnel are properly attired in PPE to mitigate the hazards associated with the site and that only those personnel with the experience and training are permitted in the areas where exposures to site hazards could exist.

## 10.8 Exclusion Zone

The EZ is a work area where the greatest hazard potential for exposure to safety and health hazards may be, or is known to exist. EZ entry and exit control points will be established to regulate the flow of personnel and equipment into and out of the EZ. This will ensure that personnel and equipment are protected and that contamination located inside the EZ is properly contained. The entry/exit control points will be established up wind from the EZ to prevent airborne contaminants from migrating into "clean" areas. The site's prevailing wind direction will be used to select the entry/exit control points, but alternate entry/exit points need to be available in the event that the wind direction changes or an emergency arises which precludes the use of the primary entry/exit point. No tobacco product use, eating, drinking application of cosmetics or other hand to face activities are allowed in this area unless strictly specified in the SSHP.

It may become necessary, during hot weather conditions, to modify the restrictions on drinking in the EZ. This may be accomplished by establishing a break area inside the EZ, upwind from the work site, which is accessed through a scaled down version of the personal decontamination station. Personnel would be allowed to enter this area to drink cool fluids and rest. This modification may be implemented only if the potential for contamination is low, if proper procedures are established, and if approved by the HSM. For the GMP the EZ is defined as the immediate area around the monitoring well and within the fenced area of the OB/OD.

## 10.9 Support Zone

The SZ is the area outside the EZ and is the location of the administrative and other support functions required to keep the operations in the EZ functioning smoothly. The SZ includes facilities such as the change area, lunch and break areas, office trailer, and supply storage areas. Personnel in the SZ can wear normal work clothes since this area is designated as the



clean area and contaminated equipment and clothing must be decontaminated before leaving the EZ. The SZ is designated as the tobacco product use, eating, and drinking area. The location of the support facilities inside the SZ should be selected through careful consideration of the following:

- Site layout, including topography, open spaces and available access roads;
- Location of utilities, such as power, telephones and water;
- Line-of-sight to all activities in the EZ;
- Wind direction (the SZ should be located up-wind from the EZ); and
- Distance from the EZ (i.e. not more than 100 meters to the SZ if possible).

### **10.10 Equipment Storage and Security**

During non-working periods, all project equipment used on-site, to include hand tools, will be stored, in designated storage facilities located at the site.

### **10.11 Site Maps**

Prior to initiation of site activities, a site map will be available which will detail the following information: site size and shape; restricted areas; designated assembly points; the site access routes; staging areas; and any other information deemed necessary by the SSHO. The site map will be used by the SSHO during site safety training and the daily safety briefings, and by field teams to locate and orient work locations.

### **10.12 Site Communications**

Effective on-site and off-site communication is an integral part of site control and will be established prior to initiation of site activities. On-site communication will be used to coordinate site operations; maintain site control; pass along safety information, coordinate work/rest periods, etc.; and alert site personnel to emergency situations. Means of communicating with off-site resources will be available at all times to ensure effective communication with off-site management personnel and emergency response services. All site personnel will be familiar with the different methods of both on-site and off-site communication. The methods Sundance will use for on- and off-site communication will include:

1. On-site communications consisting of portable radios, as well as or hand signals as needed for communications.
2. Off-site communications will be accomplished using the office hard line phone or cellular telephones. Each team will have two means of communication for summoning off-site support.

### **10.13 Buddy System**

The buddy system will be employed by all personnel during operations. This system requires that a partner, or buddy, accompany each worker. The buddy provides the co-worker/partner

with assistance, observes the partner for signs of exposure, periodically checks the integrity of the partner's PPE, and notifies the SSHO or OESS if help is needed. The buddy must be in a line of sight or hearing of the partner and be prepared to enter any area the partner enters. The buddy must be fully certified to work in the level of protection that the employee is working in, and must have the appropriate PPE available.

## **11.0 Personal Hygiene and Decontamination**

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Personnel decontamination facilities will be established to ensure that personnel maintain a high degree of personal hygiene and minimize exposure to chemical and biological hazards. If required, the personnel decontamination area will be established immediately outside the EZ to facilitate decontamination and PPE removal.

### ***Level C Decontamination***

Level C protection is not anticipated during this project. If required in areas known to contain HTRW chemical hazards, Level C decontamination procedures will be developed.

### ***Level D Decontamination***

Decontamination procedures are not required for Level D protection.

The following decontamination procedures shall be followed for modified Level D PPE:

- Remove outer leather gloves
- Remove outer Tyvek™ coveralls and dispose of in the proper receptacle
- Remove nitrile gloves and dispose of in the proper receptacle
- Wash hands and face before eating, drinking, or smoking

The SSHO will also determine if personnel wearing modified Level D PPE will be required to shower. This decision will be based on the potential for PPE breakthrough and other subjective information. Personnel are required to wash hands, face, and other exposed skin areas before leaving the EZ for breaks or lunch. Towels, washcloths, and soap, will be provided to personnel.

### ***Sanitation***

Basic sanitation provisions for all employees will be provided in all places of employment as specified in EM 385-1-1. An adequate supply of drinking water shall be provided in all work areas. Cool water shall be provided during hot weather. Bottled water will be kept in coolers and will accompany field teams to all site locations. Drinking water shall be labeled as such, and segregated from non-potable water.

Bathroom facilities are located on FWDA, and are accessible. These facilities include toilets and hand wash stations (sinks).

Trash bags will be provided to each field team and will serve as the team's trash receptacle. At the end of the shift/day, all trash will either be removed from the site daily or emptied daily into an on-site central storage container that will be tightly closed each night prior to departure from the site. As previous activities have shown no hazardous waste contamination to disposable PPE, all trash will be consolidated and disposed of as stated above.

### ***Site Housekeeping***

All work areas will be maintained in a clean/neat fashion, free of loose debris and scrap. Any materials/equipment not being used will be removed and stored or disposed of accordingly. Groundwater investigation-derived waste (IDW) will be properly containerized and disposed of in accordance with the waste disposal procedures presented in the GMP.

## **12.0 Equipment Decontamination**

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Equipment used in the field, to include PPE, shall be cleaned and inspected at the end of each workday to ensure that the equipment is maintained in safe operating condition. Any equipment found to be defective would be brought to the attention of the PM or SSHO. Tools and equipment used in the EZ will be kept free of accumulations of soil and other debris and will be cleaned prior to their removal from the EZ. Hand and sample equipment will be decontaminated using an equipment decontamination station. Any wash and rinse solutions and debris associated with the equipment decontamination will be containerized as IDW and disposed of in accordance with the waste disposal procedures outlined in the GMP. Prior to the start of operations where equipment could become contaminated, the SSHO will ensure that equipment decontamination stations are established and ready to use.

## **13.0 Emergency Equipment and First Aid**

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Emergency response equipment will be on site at all times, and is covered in Section 7.2, *Emergency Response Equipment*.

### ***First Aid Response***

At least two Sundance employees on-site will hold a current certificate in American Red Cross or American Heart Association Standard First Aid. This training provides 6.5 hours of adult CPR and basic first aid. If a medical emergency exists, consult the emergency phone number list and request an ambulance immediately. Perform first aid/CPR as necessary, stabilize the injured, decontaminate if necessary, and extricate only if the environment they are in is dangerous or unsafe and only if the rescuers are appropriately protected for potential hazards they may encounter during the rescue. When emergency services personnel arrive, communicate all first aid activities that have occurred. Transfer responsibility for care of the injured/ill to the emergency services personnel. The following items and emergency response equipment will be located within easy access at all times:

- First-aid kit and bloodborne pathogen infection control kit.
- Eyewash –an appropriate amount of portable sterile eyewash bottles will be available on site for flushing foreign particles or contaminants out of eyes. An eyewash kit will be located in all field vehicles and at the designated project trailer. The SSHO will demonstrate the proper operation of the unit(s) prior to the start of work.
- Emergency phone numbers list.
- Hospital route map.
- Cellular phones and/or portable radios for emergency communications in remote areas.
- Type ABC fire extinguishers to contain and extinguish small fires. The local or facility fire department shall be summoned in the event of any fire on site.
- Drugs, inhalants, or medications shall not be included in the first-aid kit.

### **13.1 Spills or Leaks**

If a spill at the site is observed, Sundance will immediately notify the USACE site representative and follow the procedures listed in Section 14.0: *Emergency Response Plan and Contingency Procedures*. An assessment will be made of the magnitude and potential impact of the release. Sundance will maintain the following equipment and materials for use during spill response activities:

- Absorbent pads
- Granular absorbent material (noncombustible)
- Polyethylene sheeting
- Shovels and assorted hand tools

## **14.0 Emergency Response Plan and Contingency Procedures**

Thorough pre-planning, proper design, and implementation of the required emergency response contingencies can dramatically reduce the frequency and severity of emergencies. If an emergency does occur, quick, decisive action will be required since even short delays can create or escalate life-threatening situations. To ensure rapid, effective response to a site emergency, the procedures and contingency plans outlined in this section shall be implemented prior to and during the conduct of any site activities involving exposure to safety and health hazards

### **14.1 Pre-Emergency Planning**

During the development of the activity hazard analyses included in this SSHP, potential H&S hazards associated with the conduct of site activities were identified. Once identified, these hazards were assessed to determine the risk that these hazards could result in an emergency situation. Contingency plans for responding to the potential emergency situations have been developed and are included in this SSHP.

Prior to commencing site operations, site personnel will have contacted and met with appropriate local authorities to inform them of the site activities to be performed under this SSHP and the potential hazards that these activities pose to site personnel, the environment, and the public. The PM and SSHO will confirm information from the local authorities related to the type of emergency services available, including any contact phone numbers or procedures needed to summon the services. The SSHO will be responsible for ensuring that the telephone numbers and procedures for contacting local emergency services are posted as requirement in this section.

## **14.2 Emergency Response Team**

The emergency response team will be comprised of project team members and offsite organizations. The first level of response will come from the SSHO, OESS, and HSM. The HSM will serve as the emergency response coordinator and in his absence will delegate an alternate. Both are trained in first aid and CPR and have the capacity and authority to call for a second level of response. The second level responders will include outside organizations such as emergency medical responders, tribal and state police, and wild land fire response. Project team members will not be responsible for fire suppression response. The HSM will only allow qualified individuals to take part in the emergency response actions.

## **14.3 Personnel Roles and Lines of Authority**

The roles and responsibilities of personnel for response to emergencies at the FWDA will be clearly defined and coordinated with subcontractors, and USACE project personnel. The responding Fire Department (911) will evaluate the emergency situation and make the determination whether to involve a Hazardous Materials Unit in the response. The responsibilities of specific project individuals and the coordination of the responding Fire Department are defined in the following sections.

***SSHO****Error! Bookmark not defined.*

Upon notification of an emergency situation, the SSHO will assume the role of the On-Site Incident Commander. As the On-Site Incident Commander, the SSHO will have overall responsibility for coordinating the efforts of the on-site response actions, as well as the off-site emergency response agencies. Additionally, the SSHO shall ensure that required off-site emergency services have been summoned and will also be responsible for notifying and coordinating all relevant Federal, state and local regulatory and response agencies. In the event that the SSHO is incapacitated, the designated site personnel will assume the duties of the SSHO.

### ***Ordnance and Explosives Safety Specialist***

The OESS will directly control the operations of field personnel performing activities within the EZ where a MEC hazard is probable. The OESS will assist the SSHO and the FTL in evaluating

health and safety concerns with respect to MEC emergency response actions, and has authority to take action providing a safe work place to employees and subcontractors during such events.

### ***Project Manager***

The PM will provide support to emergency responders and dedicate appropriate project resources to the response effort. If required, the PM will mobilize additional personnel and equipment to the site.

### ***Emergency Response Services, Contacts, and Notification***

During site activities, site personnel will act, to the greatest extent possible, in the role of on-site emergency response personnel. The SSHO will designate the personnel assigned to emergency response tasks prior to initiation of site activities involving the potential for an on-site emergency. On-site emergency response personnel will receive training in the response actions that they will be authorized to, and may be directed to, perform during a site emergency.

The primary means of obtaining off-site emergency services will be through the phone notification of the emergency services and contacts listed in Table 14-1: *Emergency Telephone Numbers*. It must be noted that all contact with off-site emergency services will be coordinated through the SSHO.

The information provided to the notified person should include the nature of the incident and the exact location and the suspected contaminants or material involved. Information regarding the incident that should be reported to the emergency operator includes the following:

- Name and telephone number of the individual reporting the incident
- Location and type of incident
- Nature of the incident (fire, explosion, spill, or release) and substances involved
- Number and nature of medical injuries
- Movement or direction of spill/vapor/smoke
- Response actions currently in progress
- Estimate of quantity of any released materials
- Status of incident
- Other pertinent information

**Table 14-1: Emergency Telephone Numbers**

<b>Service/Contact</b>	<b>Agency/Position</b>	<b>Telephone Number</b>
General Emergency Contact	FWDA	via radio communication
	FWDA Manager	(505) 905-6109
	FWDA BRAC Environmental Coordinator	(330) 358-7312
Land or Air Ambulance	Med Star	911
Emergency Hospital Care	Rehoboth McKinley Christian Hospital	(505) 863-7000 (General) (505) 863-7141 (Em. Room)
Minor Injuries	Rehoboth McKinley Christian Health Care Services	(505) 863-7000 (General)
Police (Local)	McKinley County Sheriff's Office	911 (505) 863-1410 (General) (505) 722-2002 (Dispatch)
	New Mexico State Police	911 (505) 863-9353
Fire	Fort Wingate Fire Department	911 (505) 488-5261
Richard Cruz	FWDA Manager	(505) 905-6109
Mark Patterson	FWDA BRAC Environmental Coordinator	(330) 358-7312
David Henry	Project Geologist/Contract Administrator/QA Representative	(505) 342-3139
Matt Masten	COR/QA Representative	(505) 342-3363
Dale Flores	Sundance Project Manager	(505)-835-7660 ext.153 (Office) (505)-259-2954 (Cell)
John Nance	Sundance SSHO	(505) 835-7660 ext. 152 (Office) (505) 321-7260 (cell)

### ***Emergency Recognition and Prevention***

Site employees will be informed of all known hazardous substances on site. All site employees will be trained on the potential sources of emergencies for the site, and how to recognize emergency conditions. This training will include recognition of signs of an unplanned release (i.e., odors, visual indications, instrument readings, etc.).

### ***Personal Exposure or Injury***

Every precaution will be taken to aid in the prevention of injuries and/or exposure to HTRW COIs and MEC contaminants. These precautions generally consist of the following measures:

- Personnel will be properly trained for their work duties
- Site personnel will wear appropriate PPE for each specific task or work assignment
- Site personnel will follow the proper field safety protocols as defined
- Site personnel will be made aware of potential environmental and chemical hazards

In the event of personal exposure to HTRW COI, the general guidelines presented in this SSHP will be implemented.

### ***Site Security and Control***

Site security and control measures are discussed in Section 10.7: *Security Procedures*.

### ***Fire Control Plan***

In the event or imminent danger of a fire, all activities shall halt, and the SSHO and FWDA BEC will be immediately notified. If it is safe to do so, site personnel may use fire-fighting equipment available on-site to remove and isolate flammable or other hazardous materials that may contribute to the fire.

### ***Small Fires***

A small fire is defined as a fire that can be extinguished with a 4A:20B:C fire extinguisher. In the event of a small fire, site personnel will take the following actions:

1. Site personnel will immediately notify the SSHO.
2. The FWDA BEC will be immediately notified of the occurrence of the fire by the SSHO.
3. All unnecessary personnel shall be evacuated to an upwind location.
4. Under the initial direction of the SSHO, site personnel will extinguish the fire from an upwind location.
5. The SSHO shall summon the local fire department and any other emergency response services (police, ambulance, hospital, etc.) as needed for the treatment of injuries or exposures.



6. Site personnel will not attempt to extinguish a fire, even a small one, if explosives are involved, and all site personnel will evacuate the site if explosives are involved.
7. After the fire is extinguished, an investigation will be initiated to determine the cause of the fire and to identify any operational changes that may be required to prevent future fires.

### **Large Fires**

In the event that a large fire occurs, or if a small fire cannot be extinguished and develops into a large fire, the following actions shall be taken:

1. Site personnel will immediately notify the SSHO.
2. The FWDA BEC will be immediately notified of the occurrence of the fire by the SSHO
3. All unnecessary personnel shall be evacuated to an upwind assembly point.
4. The SSHO shall summon the local fire department and any other emergency response services (police, ambulance, hospital, etc.) as needed for the treatment of injuries or exposures.
5. To the extent that it can be safely accomplished, the SSHO will direct site personnel to move vital equipment/supplies from the fire's path.
6. To the safest extent possible, and with available resources, site personnel will fight the fire from an upwind location.
7. At no time shall attempts be made to extinguish a fire involving explosives and all personnel will evacuate the site if the fire involves explosives.
8. After the fire is extinguished, an investigation will be initiated to determine the cause of the fire and to identify any operational changes that may be required to prevent future fires.
9. Resumption of activities after a large fire would require approval from the FWDA BEC.

## **14.4 Explosion**

In the event of an explosion, all personnel shall evacuate and help secure the site and the SSHO will immediately be notified of the situation. The SSHO shall request the required support equipment and personnel. If personnel injuries have occurred, the SSHO shall direct and coordinate the treatment of the affected personnel. After an explosion, it is essential that the site be evacuated and that no one is allowed to re-enter the area, except to possibly save a life, for at least 30 minutes after the explosion. The SSHO, in conjunction with the PM, will determine what actions will be taken to resolve the situation, and once resolved, the SSHO will initiate an investigation to determine the cause of the explosion. Any changes to the SSHP will be made and approved prior to the resumption of site activities.

## **14.5 Spill Response**

If a spill at the site is observed, Sundance will immediately notify the PM and the FWDA BEC. Upon their arrival at the site, the SSHO will brief them on the situation at hand and any potential hazards to the team. An assessment will be made of the magnitude and potential impact of the

release. If it is safe to do so, site personnel will attempt to locate the source of the release, prevent further release, and contain the spilled and/or affected materials as follows:

- The spill or release area will be approached cautiously.
- Hazards will be identified based on available information from witnesses or material identification documents (placards, MSDSs, logs). The potential hazards will be evaluated to determine the proper personal protection levels, methods, and equipment necessary for response.
- If necessary, the release area will be evacuated, isolated, and secured.
- If possible, spill containment will initially be made without entering the immediate hazard area.
- Entry to the release area will be made with the PPE, personnel, methods, and equipment necessary to perform the work. Spill containment and collection will be performed in four steps as follows:
  - The spill will be contained with absorbent socks, booms, granules, or construction of temporary dikes.
  - The spill will be contained at the source by plugging leaks, up righting containers, over packing containers, or transferring contents of a leaking container.
  - The spilled material will be collected with shovels or heavy equipment as necessary.
  - The spilled material will be stored for further treatment or disposal. Treatment and/or disposal options of the material will depend on the amount and type of material.

In the unlikely event that site personnel cannot safely and sufficiently respond to a release, evacuation of the area may be warranted. The decision to evacuate will depend upon the severity of the release.

## **14.6 Spill Containment**

No hazardous substances or materials are expected to be on site that would potentially pose a spill concern. Gasoline and diesel fuel may be stored in cans of less than or equal to five gallons. As a precaution, spill containment equipment will be stored in the field equipment office. If a spill occurs, preventive measures will be implemented.

## **14.7 Evacuation Procedures and Routes**

The authority to order personnel to evacuate the area rests with the FTL, OESS, and SSHO who each will advise the other as soon as possible. Evacuations may or may not be limited to specific EZ or site area.

### ***Site Evacuation Procedures***

- Personnel working in the EZ will immediately make their way to the designated assembly or rally point for a “head count.” Depending on the severity of the event and allowable time, personnel exiting the EZ may be instructed to forego or modify decontamination procedures.

- Personnel in the EZ will immediately report to the designated assembly or rally point for a “head count” and further instructions. The FTL, OESS, and SSHO will remain in contact to ensure that evacuation procedures are properly executed. If the designated assembly or rally point is inaccessible, personnel shall evacuate to an upwind location as determined by the windsock and perform a head count.
- Situations requiring evacuation may include unusually severe weather conditions, fires, or significant chemical spills or releases.
- The safe evacuation distance will depend on the type of emergency involved, such as the presence of MEC and will ultimately be determined by the SSHO, OESS and the FTL. If an emergency situation involves chemical warfare material, the default safe distance will be 2,000 feet from the suspected materials.
- In an emergency, it is imperative that site control and security be maintained. To control site personnel, the Site Entry/Exit Log will be used to ensure all personnel are present or accounted for at the assembly point(s).

### ***Site Evacuation Routes and Assembly Points***

Prior to the initiation of site operations, the SSHO will identify the evacuation routes and assembly points for the various areas on the site. These routes and assembly points will be identified on the site map and will be communicated each morning to site personnel during the daily safety briefing.

Driving directions from the FWDA to Rehoboth McKinley Christian Hospital are as follows:

Head north on Jim Otero Jog toward Jeff King Loop. Turn right onto Jeff King Loop. Turn left onto NM-400. Turn left onto I-40 Frontage Rd West. Take exit 26 toward I-40 Business West/I-40 Frontage West. Turn left onto NM-564/Boardman Drive. Turn right onto College Drive. Take the first right onto Hospital Drive. Take the first right onto Redrock Drive into Rehoboth McKinley Christian Hospital. A hospital route map is provided in Figure 14-1: *Hospital Route Map from FWDA to Rehoboth McKinley Christian Hospital*.

Driving directions from the FWDA to University of New Mexico Hospital are as follows:

Head north on Jim Otero Jog toward Jeff King Loop. Turn right onto Jeff King Loop. Turn left onto NM-400. Turn right to merge onto I-40 East. Take exit 159B to merge onto I-25 South toward Las Cruces. Take exit 224B toward Dr. Martin Luther King Jr. Avenue/Central Avenue/Historic U.S. 66. Turn left onto Dr. Martin Luther King Jr. Avenue Northeast. Turn Left onto University Boulevard NE. Turn right onto Lomas Boulevard. Continue on Lomas Boulevard to University of New Mexico Hospital, which will be located on the north side of Lomas Boulevard. A hospital route map is provided in Figure 14-2: *Hospital Route Map from FWDA to University of New Mexico Hospital*

### ***Emergency Decontamination Procedures***

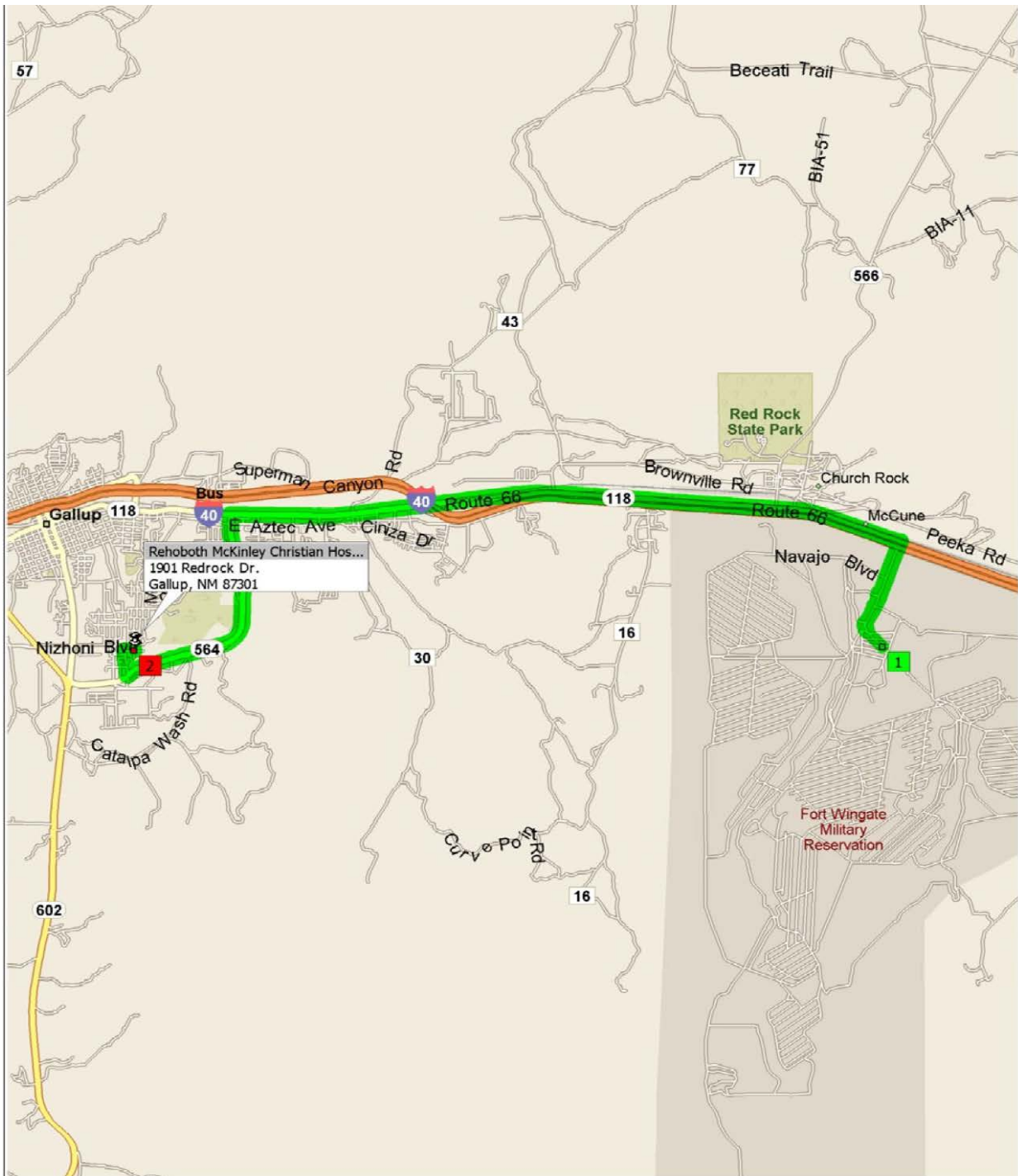
Treatment of illnesses or injuries to personnel working within the areas of the site may be more difficult because of protective clothing requirements and the potential for exposure. The SSHO or Emergency Medical Care Provider must quickly assess the extent of the injury or illness of the victim. A determination will be made if lifesaving medical treatment is critical and if personal decontamination procedures will create additional injuries or aggravate the existing condition. Life-threatening injuries must receive immediate medical attention.

### ***Community Alert Program***

It is not anticipated that any on-site operations will result in a potential emergency that would require Sundance to implement a community alert program. However, in the event that an unplanned on-site event affects the local community, the SSHO will notify the FWDA BEC of the potential hazard. The FWDA BEC will then contact local law enforcement for assistance.

Figure 14-1

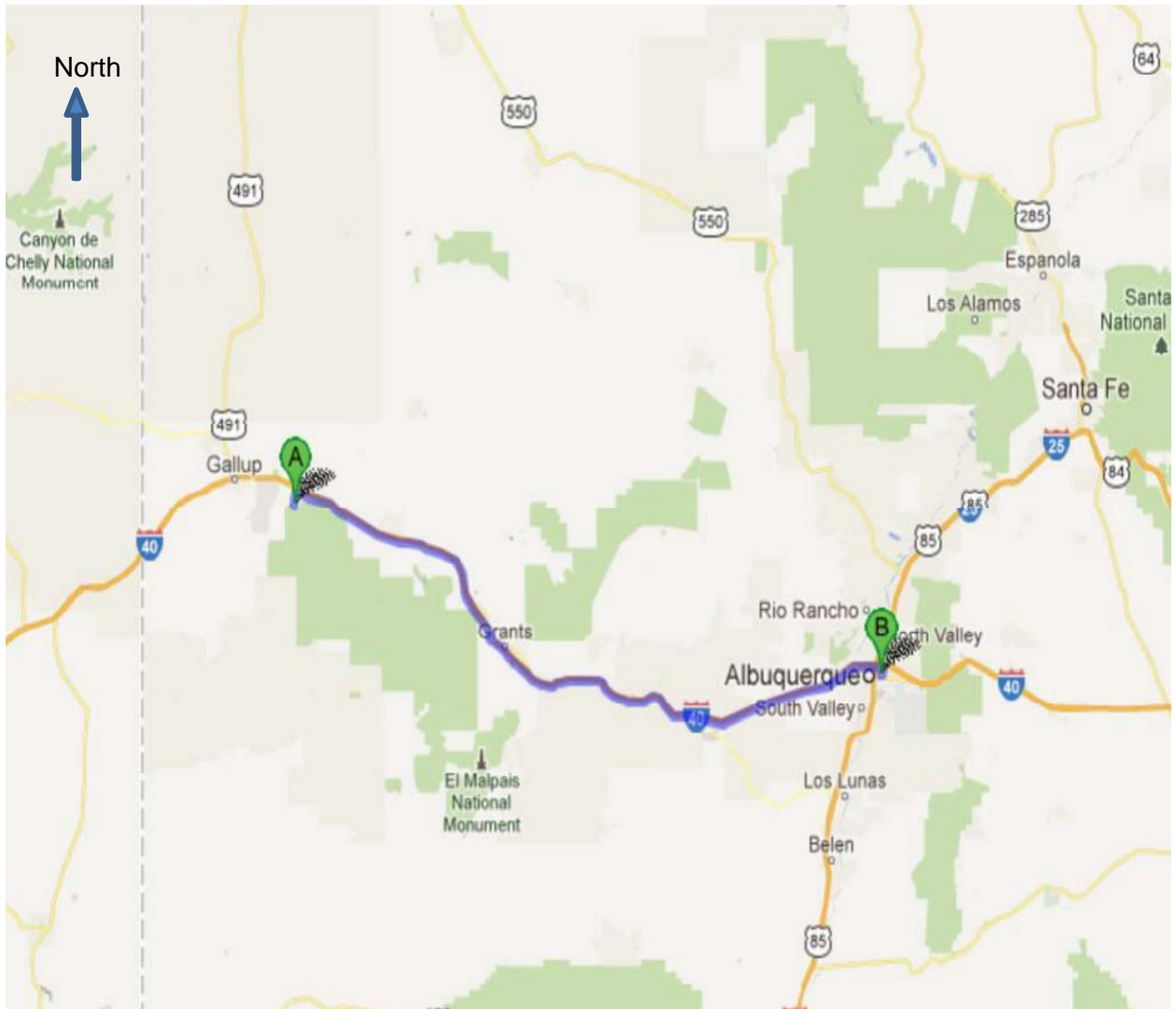
Hospital Route Map from FWDA to Rehoboth McKinley Christian Hospital



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**Figure 14-2**

Hospital Route Map from FWDA to University of New Mexico Hospital



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### ***Post Emergency Follow-Up***

Before normal site activities can resume, the site and personnel must be prepared and equipped to handle another emergency. It is also imperative that all U.S. and local regulatory agencies be notified of the emergency. Therefore, the following activities must be conducted prior to restart of site activities:

1. Notify all appropriate governmental agencies as required (i.e., OSHA must be notified if there have been any fatalities or three or more personnel hospitalized).
2. Restock and clean all equipment and supplies utilized or damaged in the emergency. Items to be cleaned will be only those durable items that can be safely cleaned and reused. Any durable items that have come in contact with blood or body fluids will be cleaned and disinfected in accordance with the BBP Control Plan. Non-durable items will be discarded accordingly with any items that have contacted blood or body fluids being discarded in appropriate bio-hazard waste containers as outlined in the BBP Control.
3. The HSM in conjunction with the SSHO shall conduct an accident investigation to determine the cause of the emergency and what preventative measures shall be taken to ensure the emergency does not occur again.
4. The HSM, in conjunction with the SSHO shall conduct an emergency response critique to assess the effectiveness of the emergency response procedures and to identify any areas requiring improvement.
5. Complete the Sundance and U.S. Army required accident forms.
6. Review and revise, as needed, the site operational and emergency response procedures, and, if necessary, update the SSHP to reflect the new procedures.

## **15.0 Confined Space Entry**

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Confined space entry is not anticipated during planned activities. A confined space is defined as a space large enough and so configured that a person can bodily enter and perform assigned work, has limited means for entry or exit, and is not designed for continuous employee occupancy.

## **16.0 Record Keeping and Data Management**

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Proper record keeping and data management are essential in the implementation of this SSHP. The forms associated with the record keeping and data management requirements must be completed in an accurate, timely fashion and filed with the appropriate entities. It is the responsibility of the SSHO to ensure that the forms are properly completed. Completed forms will be kept and maintained by Sundance. Medical and exposure records will be maintained

according to the requirements in 29CFR 1910.1020. Maintenance of other project records shall follow Sundance's QA/quality control procedures for records retention. Subcontractors will also be responsible for keeping a copy of the forms pertaining to their personnel.

### ***Logs***

The SSHO/Field Team Lead will maintain and complete a daily log for each day's work. The daily log will document chronologically each day's health and safety activities in sufficient detail for future reference as needed. Other relevant data and field information will be recorded on separate log forms for air monitoring, sampling, equipment calibration inspections, and incident reporting. All Safety Logs, Accident Report, Training Logs, Inspection Report and other forms are presented in Appendix B.

### ***Training Log***

The SSHO is responsible for ensuring that all safety- and health-related training conducted is documented in the Training Log and/or on the appropriate training forms. This log will include the initial site-specific training conducted prior to the start of site activities, the Daily/Weekly Safety Briefings, hazard-specific training, MEC refresher and recognition training, emergency response exercises, etc. The SSHO shall maintain this log and any associated training forms on site.

### ***Visitor Log***

The SSHO shall be responsible for maintaining the visitor log, which will be used to record the entry and exit of all visitors, including Sundance contractor visitors; or Federal, state, or local officials who visit the site. This log shall utilize a Site Visitors Log. All information required by the form will be completed by the site visitor and the SSHO. No visitors will be allowed to enter the project site or work zones without completing the required information.

### ***Injury/Illness/Accident Reports***

In accordance with ENG Form 3394, the following categories of accidents/incidents shall be reported to the COR by telephone or written report.

- Accidents/Incidents that result in a fatality, injury of employees, lost workdays, and/or property damage assessed at a cost of \$10,000 or more. Such incidents shall be reported to the COR as soon as possible after learning of the incident. The report shall contain as much information as is known concerning the incident. For property damage of \$2,000 or more, an ENG Form 3394 shall be completed within 5 calendar days after the incident and forwarded to the COR. The ENG Form 3394 shall be legible and signed by the supervisor of the person injured (or supervisor of the activity where property damage occurred) and by the next level of management. A copy of ENG Form 3394 is included in Appendix B.
- Any incident that could bring adverse attention or publicity to the USACE.



In the event that a reportable vehicle accident/incident occurs at the job site, the Sundance Auto Accident Form shall be completed and forwarded the same day the vehicle accident/incident occurs to the HSM the PM and Sundance President/Vice President. In addition, if USACE Form 3394 must be completed, the SSHO will complete the form and forward it to the HSM and the PM for review prior to dissemination to USACE.

### ***Accident Reporting Responsibilities***

All project personnel are required to report all near misses, injuries, illnesses, and accidents no matter how slight, to their immediate supervisor, who will immediately notify the SSHO. The SSHO shall immediately arrange appropriate medical care as required. Once immediate medical care for the injured personnel has been accomplished, the SSHO shall complete and submit a detailed report of the incident within 24 hours to the Sundance President and Vice-President.

Identified safety and occupational health deficiencies and corrective measures shall be documented and filed on site for reference by the Army or designated representative.

All near misses, injuries, illnesses, and accidents shall be investigated by on-site management personnel. The FTL, PM, and SSHO will investigate the conditions that led to the accident. They will document how the accident occurred and identify unsafe acts or conditions that occurred or existed at the time of the accident. Corrective actions will be determined and implemented to prevent recurrence of the accident, and responsibility for implementation of corrective actions will be assigned. The investigation shall be started immediately, and all information shall be collected as soon as possible after the occurrence. The final report and required forms will be submitted to the army, the Sundance President and Vice-President, and other appropriate personnel.

## References

**Department of Defense Explosives Safety Board (DDSEB). 2004-** *Minimum Qualifications for Unexploded Ordnance (UXO) Technicians and Personnel*. DDESB Technical Paper 18. Washington, D.C. : U.S. Department of Defense, December 20.

**Innovar. 2012-** *Interim Facility-Wide Groundwater Monitoring Plan Version 6. Fort Wingate Depot Activity*, McKinley County, New Mexico, NM,: Innovar, July 18.

**New Mexico Environment Department (NMED). 2005-** *Resource Conservation and Recovery Act Permit*. EPA ID No. NM6213820974. New Mexico : New Mexico Environment Department Hazardous Waste Bureau, December.

**PMC. 1999-** *Final Open Burning/ Open Detonation Area RCRA Interim Status Closure Plan Phase 1B - Characterization and Assessment of the Site Conditions for the Ground Water Matrix*. Gallup, New Mexico : Fort Wingate Depot Activity, December.

**U.S. Army Corps of Engineers (USACE). 2006-** *Military Munitions Response Process*. Engineer Pamphlet 1110-1-18. Washington, D.C. : U.S. Army Corps of Engineers, April 3.

— **2004.** *Munitions and Explosives of Concern (MEC) Support During Hazardous, Toxic, and Radioactive Waste (HTRW) and Construction Activities*. Engineer Publication 75-1-2. Washington, D.C. : U.S. Army Corps of Engineers.

— **2003a.** *Safety and Health Requirements Manual*. Engineer Manual 385-1-1. Washington, D.C. : U.S. Army Corps of Engineers.

— **2003b.** *Safety and Occupational Health Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW)*. Engineer Regulation 385-1-92. Washington, D.C. : U.S. Army Corps of Engineers.

## ***Appendix A***



## Activity Hazard Analysis Fort Wingate Interim Measures, Groundwater Monitoring Program

Activity Performed: Collecting groundwater measurements from groundwater wells

Recommended Protective Clothing and Equipment: Level D – leather gloves, steel-toed boots, safety glasses, hard hat if overhead hazards are present, hearing protection as required

Principal Steps	Potential Hazards	Recommended Preventative Actions
<ul style="list-style-type: none"> <li>- Vehicle Operation to and from work sites</li> <li>- Open monitoring well and screen headspace air quality</li> <li>- Measure Depth to Water using water level meter</li> <li>- Operate and lift water level meter</li> </ul>	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>- Wear sturdy work boots with good ankle support. Safety-toe boots may be worn but must have a composite (non-metal) toe.</li> <li>- Look for stable, dry areas to place feet on slopes or wet/muddy areas and keep center of gravity low</li> <li>- Follow good housekeeping practices: create walkways, establish proper materials storage, etc.</li> <li>- Remove, cover, or barricade identified hazards</li> </ul>
	Vehicle and Equipment Hazards	<ul style="list-style-type: none"> <li>- Maintain line of sight with operators</li> <li>- Establish and use appropriate hand signals</li> <li>- Establish, inspect, and clearly demarcate vehicle/equipment routes</li> <li>- Operate vehicles/equipment at a safe speed for current conditions; when off road do not exceed 25 mph. When on public roadway, observe posted speed limits.</li> <li>- Continuously check mirrors and blind spots</li> <li>- Use spotters where high noise levels or poor visibility interfere with an operator's ability to see objects on all sides of the equipment</li> </ul>
	Material Handling, Cuts, and Lacerations	<ul style="list-style-type: none"> <li>- Use proper lifting methods</li> <li>- Team lift</li> <li>- Lift with legs; keep loads close to body; don't twist while picking up loads</li> <li>- Use mechanical equipment whenever possible</li> <li>- Wear cut-resistant, leather work gloves when working with sharp objects</li> </ul>



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## Activity Hazard Analysis Fort Wingate Interim Measures, Groundwater Monitoring Program

	Heat Stress, Sun Burn, Dehydration, Cold Stress	<ul style="list-style-type: none"> <li>- Drink plenty of water, and electrolyte drinks as needed. Each person will be supplied with a minimum of 2 gallons of water per day.</li> <li>- Wear light-colored, cotton clothing. Slow down work rate and increase breaks in hot weather</li> <li>- Always wear sunscreen, even when it's cloudy</li> <li>- Keep an eye on co-workers for symptoms of heat stress. If noticed, get them to shade, open clothing, and give fluids if conscious. Notify SSHO if sunstroke is suspected</li> <li>- In cold weather, avoid exposure to wind and rain</li> <li>- Dress in layers</li> </ul>
	Dust storms	<ul style="list-style-type: none"> <li>- Protect eyes and exposed skin</li> <li>- Make sure equipment, including papers is secured so they do not blow away</li> </ul>
	Flash floods	<ul style="list-style-type: none"> <li>- Be aware of the weather. Rain at a higher elevation can generate flooding at lower elevation.</li> <li>- Move to higher ground</li> <li>- Do not try to cross flowing water</li> </ul>
	Biological hazards	<ul style="list-style-type: none"> <li>- When possible, stay on established paths and avoid walking through brush</li> <li>- Use mosquito/insect repellent following manufacturer's directions</li> <li>- Wear light-colored clothing to see ticks better</li> <li>- Inspect well vault for biting/stinging insects before and after opening</li> <li>- Don't reach under objects on the ground</li> <li>- Inspect clothing and body for ticks at end of shift</li> <li>- Wash your hands regularly, and shower immediately at home</li> <li>- Review biological hazard section of SSHP</li> </ul>
	Storms and lightning	<ul style="list-style-type: none"> <li>- Discontinue work and seek shelter as necessary</li> </ul>



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## Activity Hazard Analysis Fort Wingate Interim Measures, Groundwater Monitoring Program

	Chemical hazards	<ul style="list-style-type: none"><li>- Do not eat, drink, or smoke in active work areas</li><li>- Wash hands and face after contact with potential contaminants</li></ul>
Equipment to be used	Inspections Required	Training Required
<ol style="list-style-type: none"><li>1) Hand Tools</li><li>2) Vehicles</li></ol>	<ul style="list-style-type: none"><li>- Daily inspection of hand tools and equipment</li><li>- Weekly inspection of vehicles</li></ul>	<ul style="list-style-type: none"><li>- 40 Hour HAZWOPER</li><li>- 8-Hour Refresher</li><li>- Initial Site / Task Hazard Training</li><li>- PPE Training</li><li>- Proper inspection, maintenance and use training for hand tools</li></ul>



## Activity Hazard Analysis Fort Wingate Interim Measures, Groundwater Monitoring Program

Activity Performed: Groundwater sampling in the OB/OD area

Recommended Protective Clothing and Equipment: Level D – Nitrile gloves; leather gloves (as needed); steel or safety-toed boots; safety glasses; hard hat if overhead hazards are present; hearing protection as required

Principal Steps	Potential Hazards	Recommended Preventative Actions
<ul style="list-style-type: none"> <li>- Inspect and calibrate sampling equipment and instrumentation as necessary</li> <li>- Open monitoring well and screen headspace air quality</li> <li>- Measure Depth to Water using water level meter</li> <li>- Operate and lift water level meter</li> <li>- Purge, and sample monitoring well using appropriate equipment</li> <li>- Fill sample containers and place containers into cooler</li> </ul>	Accidental detonation of explosives	<ul style="list-style-type: none"> <li>- Personnel will attend site-specific Explosive Ordnance recognition class before commencing any site activity</li> </ul>
	Within OB/OD Area, General	<ul style="list-style-type: none"> <li>- Unexploded Ordnance (UXO)-trained personnel will escort non-UXO personnel at all times on site.</li> <li>- Only UXO-qualified personnel will perform MEC operations</li> <li>- Upon locating any suspicious item, notify the Senior Unexploded Ordnance Supervisor (SUXOS). <b>DO NOT TOUCH</b></li> <li>- Maintain on UXO-cleared pathways and step only in cleared areas</li> </ul>
	Slips, trips, falls	<ul style="list-style-type: none"> <li>- Wear sturdy work boots with good ankle support. Safety-toe boots may be worn but must have a composite (non-metal) toe.</li> <li>- Look for stable, dry areas to place feet on slopes or wet/muddy areas and keep center of gravity low</li> <li>- Follow good housekeeping practices: create walkways, establish proper materials storage, etc.</li> <li>- Remove, cover, or barricade identified hazards</li> </ul>
	Heat Stress, Sun burn, Dehydration, Cold Stress	<ul style="list-style-type: none"> <li>- Drink plenty of water, and electrolyte drinks as needed. Each person will be supplied with a minimum of 2 gallons of water per day.</li> <li>- Wear light-colored, cotton clothing. Slow down work rate and increase breaks in hot weather</li> <li>- Keep an eye on co-workers for</li> </ul>



## Activity Hazard Analysis Fort Wingate Interim Measures, Groundwater Monitoring Program

		<p>symptoms of heat stress. If noticed, get them to shade, open clothing, and give fluids if conscious. Notify SSHO if sunstroke is suspected</p> <ul style="list-style-type: none"> <li>- In cold weather, avoid exposure to wind and rain</li> <li>- Dress in layers</li> </ul>
	Fire and fueling hazards including spills	<ul style="list-style-type: none"> <li>- Do not conduct flame- or spark-producing activities within OB/OD</li> <li>- Smoke only in designated areas, and never during fueling.</li> <li>- Keep charged fire extinguishers accessible on vehicles, in equipment, near fuel storage, and near hot work.</li> <li>- Use only approved metal fuel storage cans.</li> <li>- Do not fill gasoline cans in the back of pickup trucks.</li> <li>- Fuel vehicles and equipment away from brushy areas, and shut down during fueling.</li> <li>- Keep supplies of PPE and absorbent readily available.</li> <li>- Always work within your training and equipment limitations during spills</li> </ul>
	Altitude sickness	<ul style="list-style-type: none"> <li>- Symptoms of acute mountain sickness include headache with any of the following, nausea, dizziness, fatigue/weakness, and difficulty sleeping</li> <li>- Monitor breathing, if breathing becomes labored, take a break</li> <li>- Do not overexert on the first day of field work</li> </ul>
	Facilities	<ul style="list-style-type: none"> <li>- Sanitation and toilet facilities are on site</li> </ul>
	Biological hazards	<ul style="list-style-type: none"> <li>- When possible, stay on established paths and avoid walking through brush</li> <li>- Use mosquito/insect repellent following manufacturer's directions</li> </ul>





## Activity Hazard Analysis Fort Wingate Interim Measures, Groundwater Monitoring Program

		<ul style="list-style-type: none"> <li>- Wear light-colored clothing to see ticks better</li> <li>- Inspect well vault for biting/stinging insects before and after opening</li> <li>- Don't reach under objects on the ground</li> <li>- Inspect clothing and body for ticks at end of shift</li> <li>- Wash your hands regularly, and shower immediately at home</li> <li>- Review biological hazard section of SSHP</li> </ul>
	Dust storms	<ul style="list-style-type: none"> <li>- Protect eyes and exposed skin</li> <li>- Make sure equipment, including papers is secured so they do not blow away</li> </ul>
	Flash floods	<ul style="list-style-type: none"> <li>- Be aware of the weather. Rain at a higher elevation can generate flooding at lower elevation.</li> <li>- Move to higher ground</li> <li>- Do not try to cross flowing water</li> </ul>
	Noise	<ul style="list-style-type: none"> <li>- Stand away from operating equipment whenever possible</li> <li>- Wear ear plugs or ear muffs</li> </ul>
	Storms and lightning	<ul style="list-style-type: none"> <li>- Discontinue work and seek shelter as necessary</li> </ul>
	Chemical hazards	<ul style="list-style-type: none"> <li>- Do not eat, drink, or smoke in active work areas</li> <li>- Wash hands and face after contact with potential contaminants</li> </ul>
<b>Equipment to be used</b>	<b>Inspections Required</b>	<b>Training Required</b>
1) Hand Tools 2) Water Quality Meter(s) 3) Water Level Meter	<ul style="list-style-type: none"> <li>- Daily inspection of hand tools and equipment</li> <li>- Weekly inspection of vehicles</li> </ul>	<ul style="list-style-type: none"> <li>- 40 Hour HAZWOPER</li> <li>- 8-Hour Refresher</li> <li>- Initial Site / Task Hazard Training</li> <li>- PPE Training</li> <li>- Proper inspection, maintenance and use training for hand tools</li> </ul>



## Activity Hazard Analysis Fort Wingate Interim Measures, Groundwater Monitoring Program

Activity Performed: : Groundwater sampling from groundwater wells

Recommended Protective Clothing and Equipment: Level D – Nitrile gloves; leather gloves (as needed); steel or safety-toed boots; safety glasses; hard hat if overhead hazards are present; hearing protection as required

Principal Steps	Potential Hazards	Recommended Preventative Actions
<ul style="list-style-type: none"> <li>- Inspect and calibrate sampling equipment and instrumentation as necessary</li> <li>- Open monitoring well and screen headspace air quality</li> <li>- Measure Depth to Water using water level meter</li> <li>- Operate and lift water level meter</li> <li>- Purge, and sample monitoring well using appropriate equipment</li> <li>- Fill sample containers and place containers into cooler</li> </ul>	Slips, trips, falls	<ul style="list-style-type: none"> <li>- Wear sturdy work boots with good ankle support. Safety-toe boots may be worn but must have a composite (non-metal) toe.</li> <li>- Look for stable, dry areas to place feet on slopes or wet/muddy areas and keep center of gravity low</li> <li>- Follow good housekeeping practices: create walkways, establish proper materials storage, etc.</li> <li>- Remove, cover, or barricade identified hazards</li> </ul>
	Material Handling, Cuts, and Lacerations	<ul style="list-style-type: none"> <li>- Use proper lifting methods</li> <li>- Team lift</li> <li>- Lift with legs; keep loads close to body; don't twist while picking up loads</li> <li>- Use mechanical equipment whenever possible</li> <li>- Wear cut-resistant, leather work gloves when working with sharp objects</li> </ul>
	Heat Stress, Sun burn, Dehydration, Cold Stress	<ul style="list-style-type: none"> <li>- Drink plenty of water, and electrolyte drinks as needed. Each person will be supplied with a minimum of 2 gallons of water per day.</li> <li>- Wear light-colored, cotton clothing. Slow down work rate and increase breaks in hot weather</li> <li>- Keep an eye on co-workers for symptoms of heat stress. If noticed, get them to shade, open clothing, and give fluids if conscious. Notify SSHO if sunstroke is suspected</li> <li>- In cold weather, avoid exposure to wind and rain</li> <li>- Dress in layers</li> </ul>
	Fire and fueling hazards including spills	<ul style="list-style-type: none"> <li>- Do not conduct flame- or spark-producing activities within OB/OD</li> </ul>



## Activity Hazard Analysis Fort Wingate Interim Measures, Groundwater Monitoring Program

		<ul style="list-style-type: none"> <li>- Smoke only in designated areas, and never during fueling.</li> <li>- Keep charged fire extinguishers accessible on vehicles, in equipment, near fuel storage, and near hot work.</li> <li>- Use only approved metal fuel storage cans.</li> <li>- Do not fill gasoline cans in the back of pickup trucks.</li> <li>- Fuel vehicles and equipment away from brushy areas, and shut down during fueling.</li> <li>- Keep supplies of PPE and absorbent readily available.</li> <li>- Always work within your training and equipment limitations during spills</li> </ul>
	Altitude sickness	<ul style="list-style-type: none"> <li>- Symptoms of acute mountain sickness include headache with any of the following, nausea, dizziness, fatigue/weakness, and difficulty sleeping</li> <li>- Monitor breathing, if breathing becomes labored, take a break</li> <li>- Do not overexert on the first day of field work</li> </ul>
	Facilities	<ul style="list-style-type: none"> <li>- Sanitation and toilet facilities are on site</li> </ul>
	Biological hazards	<ul style="list-style-type: none"> <li>- When possible, stay on established paths and avoid walking through brush</li> <li>- Use mosquito/insect repellent following manufacturer's directions</li> <li>- Wear light-colored clothing to see ticks better</li> <li>- Inspect well vault for biting/stinging insects before and after opening</li> <li>- Don't reach under objects on the ground</li> <li>- Inspect clothing and body for ticks at end of shift</li> <li>- Wash your hands regularly, and shower immediately at home</li> <li>- Review biological hazard section of SSHP</li> </ul>



## Activity Hazard Analysis Fort Wingate Interim Measures, Groundwater Monitoring Program

	Dust storms	<ul style="list-style-type: none"> <li>- Protect eyes and exposed skin</li> <li>- Make sure equipment, including papers is secured so they do not blow away</li> </ul>
	Flash floods	<ul style="list-style-type: none"> <li>- Be aware of the weather. Rain at a higher elevation can generate flooding at lower elevation.</li> <li>- Move to higher ground</li> <li>- Do not try to cross flowing water</li> </ul>
	Noise	<ul style="list-style-type: none"> <li>- Stand away from operating equipment whenever possible</li> <li>- Wear ear plugs or ear muffs</li> </ul>
	Storms and lightning	<ul style="list-style-type: none"> <li>- Discontinue work and seek shelter as necessary</li> </ul>
	Chemical hazards	<ul style="list-style-type: none"> <li>- Do not eat, drink, or smoke in active work areas</li> <li>- Wash hands and face after contact with potential contaminants</li> </ul>
<b>Equipment to be used</b>	<b>Inspections Required</b>	<b>Training Required</b>
1) Hand Tools 2) Water Quality Meter(s) 3) Water Level Meter	<ul style="list-style-type: none"> <li>- Daily inspection of hand tools and equipment</li> <li>- Weekly inspection of vehicles</li> </ul>	<ul style="list-style-type: none"> <li>- 40 Hour HAZWOPER</li> <li>- 8-Hour Refresher</li> <li>- Initial Site / Task Hazard Training</li> <li>- PPE Training</li> <li>- Proper inspection, maintenance and use training for hand tools</li> </ul>



## Activity Hazard Analysis Fort Wingate Interim Measures, Groundwater Monitoring Program

Activity Performed: General Site Setup/ Vehicle Operation

Recommended Protective Clothing and Equipment: Level D – leather gloves, steel-toed boots, safety glasses, hard hat if overhead hazards are present, hearing protection as required

Principal Steps	Potential Hazards	Recommended Preventative Actions
<ul style="list-style-type: none"> <li>- Vehicle Operation to and from work sites</li> <li>- Safe driving practices</li> <li>- Backing vehicles</li> <li>- Lift containers/equipment to and from work vehicles</li> </ul>	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>- Wear sturdy work boots with good ankle support. Safety-toe boots may be worn but must have a composite (non-metal) toe.</li> <li>- Look for stable, dry areas to place feet on slopes or wet/muddy areas and keep center of gravity low</li> <li>- Follow good housekeeping practices: create walkways, establish proper materials storage, etc.</li> <li>- Remove, cover, or barricade identified hazards</li> </ul>
	Vehicle and Equipment Hazards	<ul style="list-style-type: none"> <li>- Maintain line of sight with operators</li> <li>- Establish and use appropriate hand signals</li> <li>- Establish, inspect, and clearly demarcate vehicle/equipment routes</li> <li>- Operate vehicles/equipment at a safe speed for current conditions; when off road do not exceed 25 mph. When on public roadway, observe posted speed limits.</li> <li>- Continuously check mirrors and blind spots</li> <li>- Use spotters where high noise levels or poor visibility interfere with an operator's ability to see objects on all sides of the equipment</li> </ul>



## Activity Hazard Analysis Fort Wingate Interim Measures, Groundwater Monitoring Program

Activity Performed: General site setup/ Vehicle Operation

Recommended Protective Clothing and Equipment: Level D – leather gloves, steel-toed boots, safety glasses, hard hat if overhead hazards are present, hearing protection as required

Principal Steps	Potential Hazards	Recommended Preventative Actions
	Material Handling, Cuts, and Lacerations	<ul style="list-style-type: none"> <li>- Use proper lifting methods</li> <li>- Team lift</li> <li>- Lift with legs; keep loads close to body; don't twist while picking up loads</li> <li>- Use mechanical equipment whenever possible</li> <li>- Wear cut-resistant, leather work gloves when working with sharp objects</li> </ul>
	Storage Drum Handling Hazards	<ul style="list-style-type: none"> <li>- Utilize safe drum handling procedures</li> <li>- Utilize mechanical lifting techniques when applicable to prevent manual handling of drums</li> <li>- Wear Leather gloves and be aware of pinch points</li> </ul>
Equipment to be used	Inspections Required	Training Required
1) Hand Tools  2) Vehicles	<ul style="list-style-type: none"> <li>- Daily inspection of hand tools and equipment</li> <li>- Weekly inspection of vehicles</li> </ul>	<ul style="list-style-type: none"> <li>- 40 Hour HAZWOPER</li> <li>- 8-Hour Refresher</li> <li>- Initial Site / Task Hazard Training</li> <li>- PPE Training</li> <li>- Proper inspection, maintenance and use training for hand tools</li> </ul>

## *Appendix B*



Tailgate Safety Meeting & Job Safety Analysis

Project Name \_\_\_\_\_ PM: \_\_\_\_\_

Location: \_\_\_\_\_ SSHO: \_\_\_\_\_

Project Number \_\_\_\_\_ SUXOS: \_\_\_\_\_  
(OPTIONAL)

Weather: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Activities to be performed: \_\_\_\_\_  
\_\_\_\_\_

Hazards Related to Task(s): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Equipment Used \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Additional Safety Topics or Discussions: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SIGNATURES

Print \_\_\_\_\_  
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# Sundance Consulting, Inc.



## 3-Day On-Site Supervised Training & HazCom Log

Site Name: \_\_\_\_\_

PM: \_\_\_\_\_

Location: \_\_\_\_\_

SSHO: \_\_\_\_\_

Contract/

Task Order: \_\_\_\_\_

SUXOS: \_\_\_\_\_

(OPTIONAL)

The site personnel listed below have received Site Hazard Communication (HAZCOM) as specified in 20 CFR 1910.120(i) and have participated in three-days of supervised on-site training as required by 29 CFR 1910.120(e)(i). The Site Hazard Information Training includes information related to the nature, level, and degree of exposure likely to result during participation in site operations. The 3-Day Training has included: a description of the site chain-of-command; use/care/maintenance of PPE; personnel and equipment decon procedures; safe work practices; medical/training requirements; and emergency response procedures.

Name (printed)	Signature	3-Day		Date Started	Date Completed
		Supervision	HazCom		
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		
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		<input type="checkbox"/>	<input type="checkbox"/>		



## AUTO ACCIDENT FORM

Driver's Name: \_\_\_\_\_ DOB: \_\_\_\_\_

*Last Name, First Name MI*

SSN: \_\_\_\_\_ Driver's License No. \_\_\_\_\_ State: \_\_\_\_\_

Your Department: \_\_\_\_\_ Address: \_\_\_\_\_

Telephone Number, where you may be reached: Office \_\_\_\_\_ Home : \_\_\_\_\_

Rental Vehicle: Yes No If, yes, Rental Agency: \_\_\_\_\_

Vehicle Identification Number: \_\_\_\_\_ Lic Plate Number: \_\_\_\_\_

Year: \_\_\_\_\_ Make: \_\_\_\_\_ Model: \_\_\_\_\_

Description of Injuries, if any: \_\_\_\_\_

Damages to Your Vehicle: \_\_\_\_\_

Were Police/DPS Notified Yes No Were Pictures Taken: Yes No

If yes, Officer's Name: \_\_\_\_\_ Report or File Number: \_\_\_\_\_

Date of Accident: \_\_\_\_\_ LOCATION OF ACCIDENT: \_\_\_\_\_

### OTHER PERSON(S) INVOLVED

Name: \_\_\_\_\_ DOB: \_\_\_\_\_

Address: \_\_\_\_\_ Driver's License Number: \_\_\_\_\_

How may we contact you: Work: \_\_\_\_\_ Home \_\_\_\_\_ Other: \_\_\_\_\_

### VEHICLE INVOLVED

Vehicle Identification Number: \_\_\_\_\_ Lic Plate Number: \_\_\_\_\_

Year: \_\_\_\_\_ Make: \_\_\_\_\_ Model: \_\_\_\_\_

Insurance Carrier: \_\_\_\_\_ Policy Number: \_\_\_\_\_

Description of Injuries, if any: \_\_\_\_\_

Damages to Your Vehicle: \_\_\_\_\_

### NARRATIVE REPORT/SUMMARY OF ACCIDENT:



## SAFETY TRAINING ATTENDANCE LOG

Site Name: \_\_\_\_\_

PM: \_\_\_\_\_

Location: \_\_\_\_\_

SSHO: \_\_\_\_\_

Contract/  
Task Order: \_\_\_\_\_

SUXOS: \_\_\_\_\_  
(OPTIONAL)

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

Instructor: \_\_\_\_\_

Time: \_\_\_\_\_

Training Provided: \_\_\_\_\_  
(DESCRIBE)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Name	Signature	Organization



<b>(For Safety Staff only)</b>	REPORT NO.	EROC CODE	<b>UNITED STATES ARMY CORPS OF ENGINEERS ACCIDENT INVESTIGATION REPORT</b> <i>(For Use of this Form See Help Menu and USACE Suppl to AR 385-40)</i>				<b>REQUIREMENT CONTROL SYMBOL: CEEC-S-8(R2)</b>
<b>1. ACCIDENT CLASSIFICATION</b>							
PERSONNEL CLASSIFICATION		INJURY/ILLNESS/FATAL		PROPERTY DAMAGE		MOTOR VEHICLE INVOLVED	
GOVERNMENT <input type="checkbox"/> CIVILIAN <input type="checkbox"/> MILITARY		<input type="checkbox"/>		<input type="checkbox"/> FIRE INVOLVED <input type="checkbox"/> OTHER		<input type="checkbox"/>	
<input type="checkbox"/> CONTRACTOR		<input type="checkbox"/>		<input type="checkbox"/> FIRE INVOLVED <input type="checkbox"/> OTHER		<input type="checkbox"/>	
<input type="checkbox"/> PUBLIC		<input type="checkbox"/> FATAL <input type="checkbox"/> OTHER		<del>PROPERTY DAMAGE</del>		<input type="checkbox"/>	
<b>2. PERSONAL DATA</b>							
a. Name (Last, First, MI)		b. AGE	c. SEX <input type="checkbox"/> MALE <input type="checkbox"/> FEMALE		d. SOCIAL SECURITY NUMBER		
e. GRADE		f. JOB SERIES/TITLE		g. DUTY STATUS AT TIME OF ACCIDENT			
		<input type="checkbox"/> ON DUTY <input type="checkbox"/> TDY		<input type="checkbox"/> OFF DUTY			
h. EMPLOYMENT STATUS AT TIME OF ACCIDENT							
<input type="checkbox"/> ARMY ACTIVE <input type="checkbox"/> ARMY RESERVE <input type="checkbox"/> VOLUNTEER							
<input type="checkbox"/> PERMANENT <input type="checkbox"/> FOREIGN NATIONAL <input type="checkbox"/> SEASONAL							
<input type="checkbox"/> TEMPORARY <input type="checkbox"/> STUDENT							
<input type="checkbox"/> OTHER (Specify) _____							
<b>3. GENERAL INFORMATION</b>							
a. DATE OF ACCIDENT (month/day/year)		b. TIME OF ACCIDENT (Military time) hrs		c. EXACT LOCATION OF ACCIDENT		d. CONTRACTOR'S NAME	
						(1) PRIME:	
e. CONTRACT NUMBER		f. TYPE OF CONTRACT		g. HAZARDOUS/TOXIC WASTE ACTIVITY		(2) SUBCONTRACTOR:	
<input type="checkbox"/> CIVIL WORKS <input type="checkbox"/> MILITARY		<input type="checkbox"/> CONSTRUCTION <input type="checkbox"/> SERVICE		<input type="checkbox"/> SUPERFUND <input type="checkbox"/> DERP			
<input type="checkbox"/> OTHER (Specify) _____		<input type="checkbox"/> A/E <input type="checkbox"/> DREDGE		<input type="checkbox"/> IRP <input type="checkbox"/> OTHER (Specify) _____			
<input type="checkbox"/> OTHER (Specify) _____		<input type="checkbox"/> OTHER (Specify) _____					
<b>4. CONSTRUCTION ACTIVITIES ONLY (Fill in line and corresponding code number in box from list - see help menu)</b>							
a. CONSTRUCTION ACTIVITY (CODE) #				b. TYPE OF CONSTRUCTION EQUIPMENT (CODE) #			
<b>5. INJURY/ILLNESS INFORMATION (Include name on line and corresponding code number in box for items e, f &amp; g - see help menu)</b>							
a. SEVERITY OF ILLNESS/INJURY (CODE) #		b. ESTIMATED DAYS LOST (CODE) #		c. ESTIMATED DAYS HOSPITALIZED (CODE) #		d. ESTIMATED DAYS RESTRICTED DUTY (CODE) #	
e. BODY PART AFFECTED (CODE) #		f. NATURE OF ILLNESS/INJURY (CODE) #		g. TYPE AND SOURCE OF INJURY/ILLNESS (CODE) #			
PRIMARY		SECONDARY		TYPE			
				SOURCE			
<b>6. PUBLIC FATALITY (Fill in line and correspondence code number in box - see help menu)</b>							
a. ACTIVITY AT TIME OF ACCIDENT (CODE) #				b. PERSONAL FLOATION DEVICE USED? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A			
<b>7. MOTOR VEHICLE ACCIDENT</b>							
a. TYPE OF VEHICLE		b. TYPE OF COLLISION		c. SEAT BELTS USED		NOT USED	
<input type="checkbox"/> PICKUP/VAN <input type="checkbox"/> AUTOMOBILE		<input type="checkbox"/> SIDE SWIPE <input type="checkbox"/> HEAD ON <input type="checkbox"/> REAR END		(1) FRONT SEAT			
<input type="checkbox"/> TRUCK <input type="checkbox"/> OTHER (Specify)		<input type="checkbox"/> BROADSIDE <input type="checkbox"/> ROLL OVER <input type="checkbox"/> BACKING		(2) REAR SEAT			
		<input type="checkbox"/> OTHER (Specify) _____					
<b>8. PROPERTY/MATERIAL INVOLVED</b>							
a. NAME OF ITEM		b. OWNERSHIP			c. \$ AMOUNT OF DAMAGE		
(1)							
(2)							
(3)							
<b>9. VESSEL/FLOATING PLANT ACCIDENT (Fill in line and correspondence code number in box from list - see help menu)</b>							
a. TYPE OF VESSEL/FLOATING PLANT (CODE) #				b. TYPE OF COLLISION/MISHAP (CODE) #			
<b>10. ACCIDENT DESCRIPTION (Use additional paper, if necessary)</b>							

<b>11. CAUSAL FACTOR(S) (Read Instruction Before Completing)</b>					
a. (Explain YES answers in item 13)	YES	NO	a. (CONTINUED)	YES	NO
DESIGN: Was design of facility, workplace or equipment a factor?	<input type="checkbox"/>	<input type="checkbox"/>	CHEMICAL AND PHYSICAL AGENT FACTORS: Did exposure to chemical agents, such as dust, fumes, mists, vapors or physical agents, such as, noise, radiation, etc., contribute to accident?	<input type="checkbox"/>	<input type="checkbox"/>
INSPECTION/MAINTENANCE: Were inspection & maintenance procedures a factor?	<input type="checkbox"/>	<input type="checkbox"/>	OFFICE FACTORS: Did office setting such as, lifting office furniture, carrying, stooping, etc., contribute to the accident?	<input type="checkbox"/>	<input type="checkbox"/>
PERSON'S PHYSICAL CONDITION: In your opinion, was the physical condition of the person a factor?	<input type="checkbox"/>	<input type="checkbox"/>	SUPPORT FACTORS: Were inappropriate tools/resources provided to properly perform the activity/task?	<input type="checkbox"/>	<input type="checkbox"/>
OPERATING PROCEDURES: Were operating procedures a factor?	<input type="checkbox"/>	<input type="checkbox"/>	PERSONAL PROTECTIVE EQUIPMENT: Did the improper selection, use or maintenance of personal protective equipment contribute to the accident?	<input type="checkbox"/>	<input type="checkbox"/>
JOB PRACTICES: Were any job safety/health practices not followed when the accident occurred?	<input type="checkbox"/>	<input type="checkbox"/>	DRUGS/ALCOHOL: In your opinion, was drugs or alcohol a factor to the accident?	<input type="checkbox"/>	<input type="checkbox"/>
HUMAN FACTORS: Did any human factors such as, size or strength of person, etc., contribute to accident?	<input type="checkbox"/>	<input type="checkbox"/>	b. WAS A WRITTEN JOB/ACTIVITY HAZARD ANALYSIS COMPLETED FOR TASK BEING PERFORMED AT TIME OF ACCIDENT?		
ENVIRONMENTAL FACTORS: Did heat, cold, dust, sun, glare, etc., contribute to the accident?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> YES (If yes, attach a copy.)	<input type="checkbox"/> NO	

<b>12. TRAINING</b>		
a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK? <input type="checkbox"/> YES <input type="checkbox"/> NO	b. TYPE OF TRAINING. <input type="checkbox"/> CLASSROOM <input type="checkbox"/> ON JOB	c. DATE OF MOST RECENT FORMAL TRAINING. (Month) (Day) (Year)

**13. FULLY EXPLAIN WHAT ALLOWED OR CAUSED THE ACCIDENT; INCLUDE DIRECT AND INDIRECT CAUSES (See instruction for definition of direct and indirect causes.) (Use additional paper, if necessary)**

a. DIRECT CAUSE
b. INDIRECT CAUSE(S)

**14. ACTION(S) TAKEN, ANTICIPATED OR RECOMMENDED TO ELIMINATE CAUSE(S).**

DESCRIBE FULLY:

**15. DATES FOR ACTIONS IDENTIFIED IN BLOCK 14.**

a. BEGINNING (Month/Day/Year)	b. ANTICIPATED COMPLETION (Month/Day/Year)		
c. SIGNATURE AND TITLE OF SUPERVISOR COMPLETING REPORT	d. DATE (Mo/Da/Yr)	e. ORGANIZATION IDENTIFIER (Div, Br, Sect)	f. OFFICE SYMBOL
CORPS _____			
CONTRACTOR _____			

**16. MANAGEMENT REVIEW (1st)**

a. <input type="checkbox"/> CONCUR	b. <input type="checkbox"/> NON CONCUR	c. COMMENTS
SIGNATURE	TITLE	DATE

**17. MANAGEMENT REVIEW (2nd - Chief Operations, Construction, Engineering, etc.)**

a. <input type="checkbox"/> CONCUR	b. <input type="checkbox"/> NON CONCUR	c. COMMENTS
SIGNATURE	TITLE	DATE

**18. SAFETY AND OCCUPATIONAL HEALTH OFFICE REVIEW**

a. <input type="checkbox"/> CONCUR	b. <input type="checkbox"/> NON CONCUR	c. ADDITIONAL ACTIONS/COMMENTS
SIGNATURE	TITLE	DATE

**19. COMMAND APPROVAL**

COMMENTS	
COMMANDER SIGNATURE	DATE

**10. ACCIDENT DESCRIPTION (Continuation)**

**13a. DIRECT CAUSE (Continuation)**

13b.

**INDIRECT CAUSES** *(Continuation)*

14.

**ACTION(S) TAKEN, ANTICIPATED, OR RECOMMENDED TO ELIMINATE CAUSE(S)** *(Continuation)*