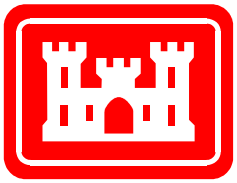
Appendix D-1

Site Safety and Health Plan (SSHP)

Munitions and Explosives of Concern (MEC) and Supporting Functions for Former Waikoloa Maneuver Area, Island of Hawaii, Hawaii

Prepared For:
U.S. Army Engineer District:
Honolulu



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Acronyms and Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
ALARA	as low as reasonably achievable
ANSI	American National Standards Institute
APP	Accident Prevention Plan
BBP	blood-borne pathogen
CEHNC	Army Engineering and Support Center, Huntsville
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CPR	cardiopulmonary resuscitation
CSHP	Corporate Safety and Health Program
CWM	chemical warfare material
DA	Department of the Army
dB	decibel
dBA	a weighted sound level
DDESB	Department of Defense Explosive Safety Board
DERP - FUDS	Defense Environmental Restoration Program – Formerly Used Defense Sites
DHHS	United States Department of Health and Human Services
DID	Data Item Description
DoD	Department of Defense
EOD	explosive ordnance disposal
EM	Engineering Manual
EMM	earth moving machinery
EMR	electromagnetic radiation
EMT	emergency medical technician
ENG	engineering
EP	engineering pamphlet
EPA	United States Environmental Protection Agency
ER	Engineering Regulation
ERT	environmental response team
EZ	exclusion zone
GPR	ground penetrating radar
GPS	Global Positioning System
HBV	Hepatitis B virus
HFD	Hazardous Fragmentation Distance
HIV	human immunodeficiency virus
HTRW	hazardous, toxic and radiological waste
HAZWOPER	Hazardous Waste Operations and Emergency Response
MFD	Maximum Fragmentation Distance
MGFD	Munition with Greatest Fragmentation Distance
mm	millimeter
MPM	most probable munition
MSD	minimum separation distance
MSDS	Material Safety Data Sheets
MR	munitions response

msl	mean sea level
NCP	National Contingency Plan
NIOSH	National Institute for Occupational Safety and Health
OE	ordnance and explosives
OSHA	Occupational Safety and Health Administration
PEL	permissible exposure limit
PCP	methadone opiates phencyclidine
PM	Project Manager
POC	point of contact
POH	USACE, Pacific Ocean, Honolulu District
PPE	personal protective equipment
QC	quality control
SHM	Safety and Health Manager
PWS	Project Work Statement
SSHP	Site Safety and Health Plan
SUXOS	Senior UXO Supervisor
SZ	support zone
ta adj	adjusted air temperature
TLV	Threshold Limit Value
TP	Technical Paper
TWA	time weighted average
U.S.	United States
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
UXO	unexploded ordnance
UXOSO	UXO Safety Officer
WBGT	Wet-bulb, Globe Temperature
PWP	Project Work Plan
WP	white phosphorus
^{o}C	degrees Celsius
^{o}F	degrees Fahrenheit
%	percent

Section 1 Introduction

This Site Safety and Health Plan (SSHP) is developed as an attachment to the Project Accident Prevention Plan (APP), Appendix D under the *Munitions and Explosives of Concern (MEC) Removal Action and Supporting Functions for Former Waikoloa Maneuver Area, Island of Hawaii, Hawaii* Project Work Statement (PWS), in accordance with the requirements of 29 Code of Federal Regulations (CFR) 1910.120, 29 CFR 1926, Engineering Regulation (ER) 385-1-92, Engineering Manual (EM) 385-1-1, Data Item Description (DID) Munitions Response (MR) -005-06, any other applicable federal, state, and local safety and occupational health laws and regulations, and the Corporate Safety and Health Program (CSHP). Where requirements of various applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements will apply to this site. The SSHP addresses all elements required by 29 CFR 1910.120(b)(4)(ii), 29 CFR 1926.65(b)(4)(ii), and ER 385-1-92, DID MR-005-06, and EM 385-1-1. The level of detail provided is tailored to the type of work, complexity of operations to be accomplished, and the hazards anticipated. This SSHP addresses those elements, which are specific to the site, and have the potential for negative effects on the safety and health of workers.

The contractor has an extensive CSHP in place, which has the full support of the Environet, Inc. staff. The CSHP is reviewed and updated annually to ensure that it remains current with regulatory requirements.

1.1 Site Description and Contamination Characterization

1.1.1 Background

1.1.1.1 The work performed under this task order will be performed consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the National Contingency Plan (NCP), Executive Order 12580. In addition, all activities involving work in areas potentially containing MEC hazards shall be performed consistent with United States (U.S.) Army Engineering and Support Center, Huntsville (CEHNC), USACE, Department of the Army (DA), and Department of Defense (DoD) requirements regarding personnel, equipment and procedures. MEC hazards exist because of DoD activities.

1.1.1.2 The work required under this PWS falls under the Defense Environmental Restoration Program– Formerly Used Defense Sites (DERP – FUDS).

1.1.1.3 MEC is a safety hazard and constitutes an imminent endangerment to the general public, on site personnel and the environment. During this action, it may be necessary for the contractor to destroy on site any MEC encountered. The contractor shall comply with 29 CFR 1910.120.

1.1.2 Site History

1.1.2.1 The Former Waikoloa Maneuver Area is located on the Island of Hawaii, between the villages of Waimea and Waikoloa, running roughly from the ocean on the west to the foothills in the east.

1.1.2.2 The U.S. Navy through a licensing agreement with Richard Smart of Parker Ranch acquired 91,000 acres in Waikoloa in December 1943. It was used as an artillery firing range on which live ammunition and other explosives were employed, with the remaining acreage utilized for troop maneuvers, and the largest encampment on the Island of Hawaii consisting of approximately 467 acres of tents and Quonset huts.

1.1.2.3 The 2nd Marine Division was assigned to Waikoloa in December 1943 for five months of training, in preparation for the Saipan-Tinian campaign. The 5th Marine Division began arriving in August 1944 as the 2nd Marine Division vacated the camp.

1.1.2.4 Property comprising the Former Waikoloa Maneuver area was surrendered to the Parker Ranch in September 1946, although the Marines had departed as of 30 June 1946.

1.1.2.5 At least two ordnance clearance efforts were conducted, one in 1946 just prior to the departure of the 5th Marine Division, and another in 1954 following accidental detonation of a dud fuze or shell killing two civilians and seriously injuring another three.

1.1.2.6 In the mid-to-late 1960's Parker Ranch subsequently sold off two parcels (Puako and Ouli) to the present owner, Nansay Hawaii, Inc., which purchased a fee simple title to the properties in April 1990. Nansay Hawaii, Inc. plans to construct golf communities. Construction of a residential subdivision at the Ouli parcel of the Nansay Hawaii site is currently ongoing while the Puako parcel remains vacant and undeveloped.

1.1.3 Topography

1.1.3.1 The islands of the State of Hawaii are terrestrial, summit portions of the long range of volcanic mountains that comprise the Hawaiian Chain. All islands are bordered by coral reefs and all have coasts that consist in part of cliffs, some of which are 300 to 3,000 feet in height.

1.1.3.2 From its coastal origin in the west, the former maneuver area rises eastward up the slope of Mauna Kea to a height of approximately 5,500 feet above mean sea level (msl). Except at its easternmost boundary, the slope of the land is less than 10 percent (%). Among the prominent landforms in the former maneuver area are ancient cinder cones. Pu'u Pa cinder cone rises approximately 300 feet (elevation 2,667 feet above msl) above the pastureland west of Mamalahoa.

1.1.3.3 To the east of Mamalahoa Highway is Holoholoku cinder cone, which rises approximately 350 feet (elevation 3,265 feet above msl) above the mildly sloping grasslands. South of the intersection of Mamalahoa Highway and Saddle Road is the Nahonaohae Pu‘u. This pu‘u and the surrounding area is a conservation area for native Hawaiian plants. South of Waikoloa Road is Pu‘u Hinai, a cinder cone approximately 1 mile southeast of Waikoloa Village.

1.1.4 Site Climate

1.1.4.1 The Waikoloa area possesses a relatively dry arid environment, with summer daytime high temperatures of 86 to 98 degrees Fahrenheit (°F) and nighttime lows of 78 to 85°F. During the winter months, daytime highs drop to 78 to 88°F, with nighttime lows of 70 to 78°F. Being in an arid environment, the Waikoloa area only gets 2 to 5 inches of rain per year.

1.1.5 Chemical Warfare Material Contamination

1.1.5.1 Due to the historical use of the site, the potential for encountering on-site chemical warfare material (CWM) contamination during site operations is not anticipated.

1.1.5.2 Archival research indicates that no CWM production, testing, or live fire operations were conducted at the Ouli Site of the former Waikoloa Maneuver Area. However, if suspect CWM is encountered during any phase of site activities, all work will immediately cease. The Clearance Team Leader will immediately notify UXOSO. Project personnel will withdraw along cleared paths upwind from the discovery. A team consisting of a minimum of two personnel will secure the area to prevent unauthorized access. Personnel should position themselves as far upwind as possible while still maintaining security of the area. UXOSO will notify the USACE Ordnance and Explosive (OE) Safety Specialist.

1.1.6 Hazardous Substance Contamination

1.1.6.1 By definition, hazardous substances are those materials that can threaten human health and/or environmental well being if released into the environment. This describes those hazardous substances or chemical contaminants present in soil that pose a threat to the environment, and as such may pose a threat to site personnel and the public during removal actions.

1.1.6.2 Past archival research and ordnance investigation indicate that such hazardous substances should not exist in the areas where activities are to be conducted under this PWS. The potential for a hazardous substance to adversely impact site personnel, during the contract would be extremely unlikely.

1.1.7 MEC Contamination

1.1.7.1 As a result of past operations at the site, MEC contamination exists. Of the 400 dud items located during the 1954 clearance effort, hand grenades, 60 millimeter (mm) and 81 mm mortars 4.2 inch mortars, 75 mm shells, and 105 mm and 155 mm fuzes, 37 mm anti tank cannon shells were located and destroyed.

1.1.7.2 Other reports of MEC discovered at the site also include, artillery fragments, M1 carbine cartridges and clips, 50 caliber cartridges, mortar covers, ammunition can lids, and at least two MKII hand grenades.

1.1.7.3 Munitions that are expected to be found include guided missiles, bombs, bomb fuzes, projectiles, projectile fuzes, grenades, grenade fuzes, rockets, rocket fuzes, land mines and associated components, pyrotechnic items, military explosives and demolition materials, and sub-munitions.

1.1.7.4 All of these items are expected to be found at ground level and up to 2 meters below ground level.

Section 2 Hazardous Analysis and Risk Assessment

2.1 Project Task Hazard Analysis

Individual hazard analyses have been performed for each major task at the project site. Table 2-1 lists the tasks, operations, and their associated hazards. The potential hazards have been identified, control measures have been outlined, training requirements and personal protective equipment (PPE) requirements have been established, and equipment inspection procedures have been established. Should new operations be introduced to this site, the UXO Safety Officer will perform an activity hazard analysis (AHA). Should operations change significantly during the course of this project, the hazard analysis will be updated to accommodate these changes. The Project Safety and Health Manager will approve any changes in AHA's, PPE or safe operating procedures. As stated in the APP, approval of such changes shall be requested, in writing, to the government's Contracting Officer prior to implementing any changes.

Table 2-1: Project Task Hazard Analysis

Task	Operation	Hazards
Location, Survey, and Mapping Operations	Escort Land Surveyors to conduct survey activities. Use a Mine Lab Explorer metal detector to ensure there are no anomalies where stakes are to be driven by the survey team, and mark the site. Drive marking stakes to mark the gird corners and transects.	Slips, trips, and falls hazards; MEC hazards; Biological hazards; Heat/cold stress hazards; Eye hazards.
Perform a Ground Reconnaissance	Use visual means and the assistance of a Mine Lab Explorer metal detector to locate surface and sub-surface anomalies to be used in conducting subsequent geophysical mapping and intrusive investigation. Locate, identify, and record, with global Positioning System (GPS), the position of anomalies. Live MEC or suspected items will be reported to the Senior Unexploded Ordnance Supervisor (SUXOS) for action.	Slips, trips, and falls hazards; MEC hazards; Biological hazards; Heat/cold stress hazards; Eye hazards.
Performing surface clearance action activities	Establish work area and grids. Locate surface MEC items with the assistance of magnetic locators. Identify MEC items. Inspected MEC scrap will be placed in a container to prevent commingling with MEC scrap which has not been inspected. Inert (explosive-free) MEC items requiring venting will be set aside for venting to be performed. Live MEC or suspected items will be disposed of by detonation.	Slips, trips, and falls hazards. MEC hazards. Biological hazards. Heat/cold stress hazards. Eye hazards. Head hazards. Cuts and abrasions hazards.
Perform a Geophysical Investigation and Evaluation	Utilizing geophysical and navigational instruments, capture all positional and instrument data digitally for analysis and evaluation. Perform all data analysis as necessary to produce a geophysical map of the site.	Slips, trips, and falls hazards. Biological hazards. Heat/cold stress hazards. Eye hazards.

Perform Anomaly Reacquisition Operations	Utilize geophysical and navigational instruments to reacquire anomalies selected for data check and intrusive investigation. Fiberglass pin flags or plastic cones will be used to mark anomaly locations.	Slips, trips, and falls hazards. Biological hazards. Heat/cold stress hazards. Eye hazards.
Performing Intrusive Anomaly Investigation	Using hand and mechanical excavation equipment, remove overburden to expose marked anomalies. Utilize geophysical instruments to maintain location of anomaly being excavated. Once anomaly has been exposed, positively identify prior to moving. Inspected MEC scrap will be placed in a container to prevent commingling with MEC scrap which has not been inspected. Inert (explosive-free) MEC items requiring venting will be set aside for venting to be performed. Live MEC or suspected items will be disposed of by detonation.	Slips, trips, and falls hazards. Biological hazards. Heat/cold stress hazard. Noise hazard. (If heavy equipment is used) Eye hazard. Head hazard. (If heavy equipment is used) Cuts and abrasions hazard. Crush and pinch point hazard. Exhaust from equipment in the breathing zone of workers. (If heavy equipment is used)
Operating Heavy Equipment	Inspect heavy equipment to ensure that it is functioning properly. Only qualified personnel shall operate heavy equipment. All qualified personnel will be trained in equipment inspection, maintenance and safe equipment operation in accordance with manufacturer user's manual. Have guide in clear view at all times (if required). If required, when guide signals it is safe to start, begin brush-cutting operations. When operations are complete, safely store equipment. Operating and safety procedures will be in accordance with the user's manual and EM 385-1-1	Handling flammable liquids during fueling. Biological hazards. Heat/cold stress hazard. Noise hazard. Eye hazard. Head hazard. Cuts and abrasions hazard. Crush and pinch point hazard. Exhaust from equipment in the breathing zone of workers. Chemical hazard (fuels and oils).
Conducting Disposal Operations	Make required notifications of disposal/venting operations. Retrieve donor explosives required for operation. Set up disposal charges in accordance with the disposal procedures. Post sentries outside the Fragmentation Zone on all access roads. Ensure sentries have a full view of the disposal site and access areas. Contact sentries to ensure that no unauthorized personnel are in, around or near the area of operation. Evacuate disposal team to safety shelter. Disposal detonation occurs. Inspect the disposal-site to ensure that disposal/venting has been completed properly.	Slips, trips, and falls hazards. MEC hazards. Biological hazards. Heat/cold stress hazards. Blast hazards (due to static electricity and electromagnetic radiation (EMR). Overpressure hazards (due to Blast Hazard). Fragmentation hazards (due to Blast Hazard). Eye hazards (due to Blast Hazard). Noise hazards (due to Blast Hazard). Cuts and abrasions hazards (due to Blast Hazard).

Performing MEC Inspection Activities	Thorough inspection of MEC items. Inspected MEC scrap will be placed in a container to prevent commingling with MEC scrap which has not been inspected. Inert (explosive-free) MEC items requiring venting will be set aside for venting to be performed. Live MEC or suspected items will be set aside for disposal, by detonation.	Slips, trips, and falls hazards. MEC hazards. Biological hazard. Heat/cold stress hazards. Eye hazards. Cuts and abrasion hazards.
Perform Quality Control Activities	Using Geophysical detection instruments perform Quality Control activities. Ensure that there are no surface anomalies within completed grids and transects. Investigate discovered surface anomalies. Report any surface anomalies meeting failure criteria to the SUXOS.	Slips, trips, and falls hazards. MEC hazards. Biological hazards. Heat/cold stress hazards. Eye hazards.
Performing Motor Vehicle Operations	Inspect vehicles to ensure proper working condition. Ensure that vehicles are properly equipped. Explosive materials, when transported, will be loaded and secured to prevent shifting. Conduct motor vehicle operations.	Explosive hazards. Heat stress. Personnel struck by mobile equipment. Vehicle collisions.
Operation of Utility Vehicle (*John Deere Gator*™)	Only qualified personnel shall operate utility vehicles. All qualified personnel will be trained in vehicle inspection, maintenance and safe operation in accordance with manufacturer user's manual. Inspect the vehicle to ensure proper working condition. Ensure that the vehicle is equipped with first aid kit, blood borne pathogen (BBP) kit, emergency eyewash kit, radios, and tools for the day's operations. Load and secure the equipment to prevent shifting. Conduct vehicle operation. Perform vehicle "post-operation" checks.	MEC hazards. Biological hazards. Heat/Cold stress hazards. Eye hazard. Fire hazard. Handling flammable liquid during fueling. Personnel struck by mobile equipment. Vehicle collisions.
Operating Geophysical Instruments	Using a Mine Lab Explorer metal detector to ensure that there are no anomalies where stakes are to be driven by the geophysical survey team. Using Geophysical detection instruments to assist in locating surface anomalies during surface investigation. Using Geophysical detection instruments, establish working grids. If required, fiberglass pin flags will be used to mark survey lines, MEC, and MEC scrap. Perform the geophysical survey.	Slips, trips, and falls hazards. MEC hazards. Biological hazards. Heat/cold stress hazards. Eye hazards.
Dual Saw Operations	Inspect area around operation. Assure the removal of flammable and combustible materials. Inspect equipment to assure it is safe to operate and all equipment adjustments are preformed in accordnance with manufacturer's operation manual. Assure that all personnel protection equipment is available and in good condition Preform dual saw cutting operations Preform post-operation maintenance of equipment.	Fire Hazard Electrical Hazard Eye Hazard Slip,trip and fall Hazard Laceration Hazard

MEC Scrap Operations	Download of MEC scrap Thorough inspection of MEC scrap WP munitions or suspected WP munitions will be reported to the SUXOS for actions. Mutilation of MEC scrap Band saw cutting of MEC scrap Forklift operations Storage of scrap in barrels Turn in of scrap Storage of hazardous waste and flammables Gas generator use	Overhead hazards Lifting hazards Chemical hazards Vehicle hazards Cut and lacerations hazards Band saw hazards Forklift hazards Eye hazards Hand hazards Foot hazards Fire hazards Electric hazards Potential WP residue
Cutting Operations	Download of ordnance explosive MEC scrap Through inspection of MEC scrap Mutilation of MEC scrap Dual saw cutting of MEC scrap Forklift operations Storage of scrap in barrels Turn in of scrap Storage of hazardous waste and flammables Gas generator use	Overhead hazards Lifting hazards Chemical hazards Vehicle hazards Cut and lacerations hazards Dual saw hazards Forklift hazards Eye hazards Hand hazards Foot hazards Fire hazards Electric hazards
Walking On Uneven Terrain	Traversing uneven terrain, hills, and gullies, while utilizing a metal detector	Falling from a mis-step Slipping on rolling rocks Tripping on object sticking out of the ground Twisting joints (ankles, knees, etc.) Blunt trauma from falls (i.e.; hitting knee when falling, etc.)
Batch Burner Furnace Operations	Establish Exclusion zones for non-essential personnel minimum 200 feet Place MEC debris in furnace Heat to a min. of 600^{o} F for 30 minutes An additional 30 of cook will take place after last sign of any reaction Cool MEC debris for minimum 30 minutes before transferring treated material Cool treated material an additional 20 minutes once removed from burner Test MEC debris for explosive residue Photograph and log results	Unintentional detonation Heat Stress Exposure Unintentional burns Unintentional fires Back Injury from improper lift technique

Open Front Barricade & Miniature open-Front Barricade Operations	When required, position Open Front Barricade (OFB) or Miniature Open-Front Barricade (MOFB) over unknown anomaly to shield people and property from unintentional detonations Establish exclusion zones for non-essential personnel at a minimum 300 feet for the 3 protected sides of the OFB. See Appendix M, ESS for the MOFB EZ on three sides and hazard fragmentation distance (HFD) for suspected ordnance on the open side for both barricades. Use two tag lines to control movement of OFB while suspended from forklift.	Slips, trips, and falls Biological hazards. Heat/cold stress hazard. Noise hazard. Eye hazard. Head hazard. Cuts and abrasions hazard. Crush and pinch point hazard. Exhaust from equipment Unintentional detonation MHE Roll over
Chop Saw Operations	Inspect area around operation. Assure the removal of flammable and combustible materials. Inspect equipment to assure it is safe to operate and all equipment adjustments are preformed in accordance with manufacturer's operation manual. Assure that all personnel protection equipment is available and in good condition Perform chop saw cutting operations Perform post-operation maintenance of equipment	Fire Hazard Electrical Hazard Eye Hazard Slip, trip and fall Hazard Laceration Hazard Unintentional detonation
Deformation – Cutting Operations	Establish exclusion zones for non-essential personnel minimum 200 feet. Download of MEC scrap Thorough inspection of MEC scrap Mutilation of MEC scrap Dual saw cutting Chop saw cutting Storage of scrap in barrels Turn in of scrap Gas generator use	Lifting hazards Chemical hazards Vehicle hazards Cut and lacerations hazards Eye hazards Hand hazards Foot hazards Fire hazards Unintentional detonation
Vegetation Clearance (Grubbing) Operations	Identify location of vegetation that needs to be cut. Use weed whackers to cut grasses and light brush Use chain saw to cut tree limbs and heavy brush up to 3 inches in diameter and not more than 4 feet above ground Chain saw operator will have an assistant pull limbs away to a cleared area	Identify location of vegetation that needs to be cut. Use weed whackers to cut grasses and light brush Use chain saw to cut tree limbs and heavy brush up to 3 inches in diameter and not more than 4 feet above ground Chain saw operator will have an assistant pull limbs away to a cleared area

TM = Trade Mark
POC = Point of Contact
QC = Quality Control.

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2.1.1 The activity hazard analysis (AHA) performed for this project include the following activities and are presented below and in the noted tables:

- Location, Survey, and Mapping Operations (Table 2-2)
- Perform a Ground Reconnaissance (Table 2-3)
- Performing Surface Removal Action Activities (Table 2-4)
- Perform a Geophysical Investigation and Evaluation (Table 2-5)
- Performing Anomaly Reacquisition Operations (Table 2-6)
- Performing Intrusive Anomaly Investigation (Table 2-7)
- Operating Heavy Equipment (Table 2-8)
- Conducting Disposal Operations (Table 2-9)
- Performing MEC Inspection Activities (Table 2-10)
- Perform Quality Control Activities (Table 2-11)
- Performing Motor Vehicle Operations (Table 2-12)
- Operation of Utility Vehicle *John Deere Gators™*(Table 2-13)
- Operating Geophysical Instruments (Table 2-14)
- Dual Saw Operations (Table 2-15)
- MEC Scrap Operations (Table 2-16)
- Cutting Operations (Table 2-17)
- Walking in Uneven Terrain (Table 2-18)
- Batch Burner Furnace Operations (Table 2-19)
- Open Front Barricade Operations (Table 2-20)
- Chop Saw Operations (Table 2-21)
- Deformation – Cutting Operations (Table 2-22)
- Mobile Expended Ordnance Deformer (Table 2-23)
- Vegetation Clearance (Grubbing) Operations (Table 2-24)
- Miniature Open-Front Barricade (MOFB) (Table 2-25)
- General Mechanized Hand Tool Operations (Table 2-26)

Table 2-2: Location, Survey, and Mapping Operations

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Location, Survey, and Mapping Operations**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Escort Land Surveyors to conduct activities. Use a MineLab Explorer metal detector to ensure there are no anomalies where stakes are to be driven, by the survey team, to mark the site. Drive marking stakes to mark the gird corners and transects. White phosphorous (WP) munitions or suspected WP munitions will be reported to the SUXOS for actions.	Slips, trips, and falls hazards; MEC hazards; Biological hazards; Heat/cold stress hazards; Eye hazards. WP Munitions	Personnel will be aware of areas they are to be working and observant to any obstacles, which may be a trip hazard. Personnel will be trained to recognize MEC hazards on-site and be familiar with procedures to be followed if MEC are located. In areas with poor visibility, the unexploded ordnance (UXO) escort will use a metal locator will be used to clear pathways. Observe all precautions for biological hazards. Refer to SSHP 2.7 for specific guidance. Observe all precautions for heat/cold stress monitoring. Refer to SSHP 6.2 for specific guidance. Operators will wear all required PPE. Personnel will operate equipment in a manner consistent with the manufacturer's procedures. Each operator will receive proper training for each piece of equipment used and will maintain the equipment in good condition. Personnel will wear PPE, at all times. Personnel will observe all precautions for WP munitions in accordance with 60A-1-1-22.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
MineLab Explorer metal detector. Survey Equipment. Grid-marking stakes and hammer. PPE: Modified Level D - Work clothes - Leather work gloves, - Over the ankle, lace up, leather work boots, and - Safety glasses (ANSI) Z87.1-1989	All equipment is to be inspected daily before use. All equipment is to be calibrated in accordance with the manufacturer's instructions. If equipment is not functioning properly or it is not in useable condition, it is to be turned in for repair/replacement. The metal locator will undergo also a field calibration on a daily basis, where the operator, on a test bed, tests it to ensure continued functioning of the equipment in the field.	Operators will be trained in the proper use and functions of the Survey and metal locators, and in required PPE. All operators will be trained in performing field calibration tests of the metal locators. Personnel will receive site-specific training for MEC recognition anticipated at the site. All operators will have current Occupational Safety and Health Administration (OSHA) HAZWOPER training. Employees working on-site will receive medical clearance.

Table 2-3: Perform a Ground Reconnaissance

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Perform a Ground Reconnaissance**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Use visual means and the assistance of a MineLab Explorer metal detector to locate surface and sub-surface anomalies to be used in conducting subsequent geophysical mapping and intrusive investigation. Locate, identify, and record, with GPS, the position of anomalies. Live MEC or suspected items will be reported to the SUXOS for action. WP munitions or suspected WP munitions will be reported to the SUXOS for action.	Slips, trips, and falls hazards; MEC hazards; Biological hazards; Heat/cold stress hazards; Eye hazards. Unintentional Detonation WP Munitions	Personnel will be aware of areas they are to be working in and observant of any obstacles, which may present a trip hazard. Personnel will be trained to recognize MEC hazards on-site and be familiar with procedures to be followed if MEC are located. In areas with poor visibility, a metal locator will be used to clear pathways. Personnel will observe all precautions for biological hazards Personnel will observe all precautions for heat/cold stress monitoring. Personnel will operate equipment in a manner consistent with the manufacturer's procedures. Each operator will receive proper training for each piece of equipment used and will maintain the equipment in good condition. PPE will be worn at all times, by personnel operating equipment and in the immediate vicinity of operations. Only UXO-qualified personnel will perform MEC operations. Personnel will observe all precautions for WP munitions in accordance with TM 60A-1-1-22.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
MineLab Explorer metal detector. Global Positioning System 2ea 5 gal. water containers with water for fire prevention or snuffing out smoking remnant or white phosphorous round Sand, 5 gal bucket, containers with sand for fire prevention or snuffing out smoking remnant or white phosphorous round Empty 5 gal bucket. PPE: Modified Level D - Work Clothes - Leather work gloves. - Over the ankle, lace up, leather work boots. - Safety glasses and/or safety goggles (ANSI Z87.1-1989).	All equipment is to be inspected daily before use. Equipment is to be calibrated in accordance with the manufacturer's instructions. The metal locator will also undergo a field calibration on a daily basis where the operator, on a test bed, tests it to ensure continued functioning of equipment in the field. If equipment is not functioning properly or it is not in useable condition, it is to be turned in for repair/replacement.	Operators will be trained in the proper use of required equipment and in the required PPE. All operators will be trained in performing field calibration tests of the metal locators. Personnel will receive site-specific training for MEC recognition anticipated at the site. All operators will have current OSHA HAZWOPER training. Employees working on-site will receive medical clearance. Personnel will receive training in small quantity spill containment cleanup and reporting procedures.

Table 2-4: Performing Surface Removal Action Activities

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Performing Surface Removal Action Activities**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Establish work area and grids. Locate surface MEC items utilizing magnetic locators. Identify MEC items. Inspected MEC scrap will be placed in a container to prevent commingling with MEC scrap which has not been inspected. Inert (explosive-free) MEC items requiring venting will be set aside for venting to be performed. Live MEC or suspected items will be disposed of by detonation. WP munitions or suspected WP munitions will be reported to the SUXOS for actions.	Slips, trips, and falls hazards. MEC hazards. Biological hazards. Heat/cold stress hazards. Eye hazards. Head hazards. Cuts and abrasions hazards. WP Munitions	Personnel will be aware of areas they are to be working in and observant of any obstacles, which may present a trip hazard. Personnel will be trained to recognize MEC hazards on-site and be familiar with procedures to be followed if MEC are located. In areas with poor visibility, a metal locator will be used to clear pathways. Personnel will observe all precautions for biological hazards Personnel will observe all precautions for heat/cold stress monitoring. Personnel will operate equipment in a manner consistent with the manufacturer's procedures. Each operator will receive proper training for each piece of equipment used and will maintain the equipment in good condition. PPE will be worn at all times, by personnel operating equipment and in the immediate vicinity of operations. Only UXO-qualified personnel will perform MEC excavation operations. Personnel will observe all precautions for WP munitions in accordance with 60A-1-1-22.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
MineLab Explorer metal detector. 2ea 5 gal. water containers with water Empty 5 gal bucket. PPE: Modified Level D - Work Clothes. - Leather work gloves. - Over the ankle, lace up, leather work boots. - Safety glasses (ANSI Z87.1-1989).	All equipment is to be inspected daily before use. Equipment is to be calibrated in accordance with the manufacturer's instructions. The metal locator will also undergo a field calibration on a daily basis where the operator, on a test bed, tests it to ensure continued functioning of equipment in the field. If equipment is not functioning properly or it is not in useable condition, it is to be turned in for repair/replacement.	Operators will be trained in the proper use of required equipment and in the required PPE. All operators will be trained in performing field calibration tests of the metal locators. Personnel will receive site-specific training for MEC recognition anticipated at the site. All operators will have current OSHA HAZWOPER training. Employees working on-site will receive medical clearance. Personnel will receive training in small quantity spill containment cleanup and reporting procedures.

Table 2-5: Perform a Geophysical Investigation and Evaluation

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Perform a Geophysical Investigation and Evaluation**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	**POTENTIAL SAFETY/HEALTH HAZARDS**	**RECOMMENDED CONTROLS**
Utilizing geophysical and navigational instruments, capture all positional and instrument data digitally for analysis and evaluation. Perform all data analysis as necessary to produce a geophysical map of the site.	Slips, trips, and falls hazards. Biological hazards. Heat/cold stress hazards. Eye hazards.	Personnel will be aware of areas they are to be working in and observant of any obstacles, which may present a trip hazard. Personnel will observe all precautions for biological hazards. Personnel will observe all precautions for heat/cold stress monitoring. Personnel will operate equipment in a manner consistent with the manufacturer's procedures. Each operator will receive proper training for each piece of equipment used and will maintain the equipment in good condition. PPE will be worn at all times, by personnel operating equipment and in the immediate vicinity of operations.

EQUIPMENT TO BE USED	**INSPECTION REQUIREMENT**	**TRAINING REQUIREMENTS**
Geophysical sensor instrumentation: Geonics Mark II EM 61 Navigational Instruments RTK Survey Grade GPS. PPE: Modified Level D Work clothes Leather work gloves, Over the ankle, lace up, leather work boots, and Safety glasses (ANSI) Z87.1-1989	All equipment is to be inspected daily, by the operator, before use. Equipment is to be calibrated, by the operator, in accordance with manufacturer's instructions. If, during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. The magnetometers will also undergo a field calibration as required in the GPO plan to assure continued functioning of equipment, in the field.	Equipment operators will be trained in the safe use of required equipment and in the required PPE. All personnel will receive training on the site-specific hazards to be encountered. All operators will be trained in performing field calibration tests of the metal locators. Personnel will receive site-specific training for MEC recognition anticipated at the site. All operators will have current OSHA HAZWOPER training. Employees working on-site will receive medical clearance.

Table 2-6: Performing Anomaly Reacquisition Operations

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Performing Anomaly Reacquisition Operations**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Utilize geophysical and navigational instruments to reacquire anomalies selected for data check and intrusive investigation. Pin flags or plastic cones will be used to mark anomaly locations.	Slips, trips, and falls hazards. Biological hazards. Heat/cold stress hazards. Eye hazards.	Personnel will be aware of areas they are to be working in and observant of any obstacles, which may present a trip hazard. Personnel will be trained to recognize MEC hazards on-site and be familiar with procedures to be followed if MEC are located. Personnel will observe all precautions for biological hazards Personnel will observe all precautions for heat/cold stress monitoring. Operators will not place fiberglass pin flags into the ground directly over an anomaly. They shall be a short distance off to the side of each anomaly. Operators will wear all required PPE. Personnel will operate equipment in a manner consistent with the manufacturer's procedures. The following precautions shall be followed (Reference: CEHNC Safety Advisory 02-01) Never place an operating geophysical instrument, its electronics, data processor, or battery pack on the ground in an area suspected of containing MEC with electronic fuzing. Do not use conductivity meters around trash piles or trenches that may contain MEC with electronic fuzing. Ground penetrating radar (GPR) units shall not be used on sites suspected of containing MEC with electric fuzing.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
Geophysical detection instrumentation. PPE: Modified Level D - Work clothes - Leatherwork gloves. - Over the ankle, lace up, leather work boots. - Safety glasses (ANSI Z87.1-1989).	All equipment is to be inspected daily before use. Equipment is to be calibrated in accordance with the manufacturer's instructions. If equipment is not functioning properly or it is not in useable condition, it is to be turned in for repair/replacement. The metal locator will also undergo a field calibration on a daily basis where the operator, on a test bed, tests it to ensure continued functioning of equipment in the field.	Operators will be trained in the proper use and functions of the geophysical/tracking equipment and in required PPE. All operators will be trained in performing field calibration tests of the metal locators. Personnel will receive site-specific training for MEC recognition anticipated at the site. All operators will have current OSHA HAZWOPER training. Employees working on-site will receive medical clearance.

Table 2-7: Performing Intrusive Anomaly Investigation

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Performing Intrusive Anomaly Investigation**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Using hand and mechanical excavation equipment, remove overburden to expose marked anomalies. Utilize geophysical instruments to maintain location of anomaly being excavated. Once anomaly has been exposed, positively identify prior to moving. Inspected MEC scrap will be placed in a container to prevent commingling with MEC scrap which has not been inspected. Inert (explosive-free) MEC items requiring venting will be set aside for venting to be performed. Live MEC or suspected items will be disposed of by detonation. WP munitions or suspected WP munitions will be reported to the SUXOS for actions.	Slips, trips, and falls hazards. MEC hazards Biological hazards. Heat/cold stress hazard. Noise hazard. (If heavy equipment is used) Eye hazard. Head hazard. (If heavy equipment is used) Cuts and abrasions hazard. Crush and pinch point hazard. Exhaust from equipment in the breathing zone of workers. (If heavy equipment is used) WP Munitions Unintentional Detonation	Personnel will be aware of areas they are to be working in and observant of any obstacles, which may present a trip hazard. Personnel will be trained to recognize MEC hazards on-site and be familiar with procedures to be followed if MEC are located. Personnel will observe all precautions for biological hazards Personnel will observe all precautions for heat/cold stress monitoring. Operators will wear all required PPE. Personnel will operate equipment in a manner consistent with the manufacturer's procedures. The following precautions shall be followed (Reference: CEHNC Safety Advisory 02-01) Never place an operating geophysical instrument, its electronics, data processor, or battery pack on the ground in an area suspected of containing MEC with electronic fuzing. Do not use conductivity meters around trash piles or trenches that may contain MEC with electronic fuzing. GPR units shall not be used on sites suspected of containing MEC with electric fuzing. Personnel will observe all precautions for WP munitions in accordance with 60A-1-1-22. Personnel required to utilize mechanical excavation equipment will refer to Table 2-8 prior to beginning task for specific PPE and safety requirements. Only UXO-qualified personnel will perform MEC operations.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
Geophysical detection instrumentation. Hand and/or mechanical excavation equipment. 2ea 5 gal. water and sand containers with water and sand for fire prevention or snuffing out smoking remnant or white phosphorous round Empty 5 gal bucket. PPE: Modified Level D - Proper work clothes - Leather work gloves. - Over the ankle, lace up, leather work boots. - Safety glasses (ANSI Z87.1-1989).	All equipment is to be inspected daily before use. Equipment is to be calibrated in accordance with the manufacturer's instructions. If equipment is not functioning properly or it is not in useable condition, it is to be turned in for repair/replacement. The metal locator will also undergo a field calibration on a daily basis where the operator, on a test bed, tests it to ensure continued functioning of equipment in the field.	Operators will be trained in the proper use and functions of the geophysical/tracking equipment and in required PPE. All operators will be trained in performing field calibration tests of the metal locators. Personnel will receive site-specific training for MEC recognition anticipated at the site. All operators will have current OSHA HAZWOPER training. Employees working on-site will receive medical clearance.

Table 2-8: Operating Heavy Equipment

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Operating Heavy Equipment (Excavation Equipment)**	ANALYZEDBY/DATE	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Inspect heavy equipment to ensure that it is functioning properly. Have guide in clear view at all times (if required). If required, when guide signals it is safe to start, begin heavy equipment operations. Only qualified personnel shall operate heavy equipment. When operations are complete, safely store equipment. Operating and safety procedures will be in accordance with the User's Manual.	Handling flammable liquids during fueling. Biological hazards. Heat/cold stress hazard. Noise hazard. Eye hazard. Head hazard. Cuts and abrasions hazard. Crush and pinch point hazard. Exhaust from equipment in the breathing zone of workers. Chemical hazard (fuels and oils). Unintentional Detonation Underground and overhead utilities	Personnel will be aware of areas to be worked in and observant of obstacles, which may present a trip hazard. Personnel will observe all precautions for biological hazards. Personnel will observe all precautions for heat/cold stress monitoring. Personnel will operate equipment in a manner consistent with the manufacturer's procedures. Ensure that heavy equipment is clear of any obstructions prior to starting. Keep hands, fingers, and feet clear of moving parts. Storage of gasoline or fuels will be in approved containers. For gasoline-powered equipment, they will NOT be fueled while running, hot, or near open flames. Gasoline-powered equipment will be taken to the fueling point for refueling. Equipment will not be started within 3 m (10 feet) of a fuel container. Cellular phones will not be used around Flammable Liquids in accordance with MEC Safety Group Safety Advisory 03-2003. All sources of ignition will be prohibited within 15 m (50 feet) of operations with a potential fire hazard. Each operator will receive proper training in equipment use and will maintain the equipment in good condition. PPE will be worn at all times, by personnel in and around the immediate vicinity of brush clearing operations. Only UXO-qualified personnel will perform MEC operations. Personnel will visually check that overhead utilities do not present a hazard prior to start of operation. In developed areas, verification will be completed that underground utilities do not present a hazard. Please reference SSHP 2.5.1.2 for further details.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
Gehl Dynalift 663 Forklift, Montana 4540, Bush Hog and Forklift attachments, John Deere 110 Tractor with Back hoe attachment PPE: Modified Level D - Work clothes - Hard hat (per ANSI Z89.1-1997), - Safety Glasses (ANSI Z87.1-1989), - Leather work gloves, - Over the ankle, lace up, leather work boots - Hearing protection (hardhat mounted earmuffs, NRR 27 decibel (dB)), and .	Equipment will be inspected and maintenance performed daily prior to use. Operators will also inspect equipment before beginning any operation/use of equipment. If, during inspection or during use, equipment fails to function properly, equipment is to be turned in for repair/replacement. All safety guards designed on equipment will remain in place. If any safety device on equipment is missing, that piece of equipment will be placed out of service until it can be repaired/replaced. All daily initial/operator safety and maintenance inspections will be properly documented on equipment checklist.	Operators will only be qualified personnel according to the requirements of the EM 385-1-1. All qualified personnel will be trained in equipment inspection, maintenance and safe equipment operation in accordance with manufacturer user's manual. All personnel will be trained in proper inspection and use of required PPE. All personnel will receive training on the site-specific hazards to be encountered. All operators will have current OSHA HAZWOPER training. Employees working on-site will receive medical clearance. All personnel will be trained in proper inspection checklist documentation procedures. List of personnel Qualified to perform task will be maintained by UXOSO.

Table 2-9: Conducting Disposal Operations

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Conducting Disposal Operations**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Verify required notifications of disposal/venting operations. Retrieve donor explosives required for operation. Set up disposal charges in accordance with the disposal procedures. Post sentries on all access roads. When possible, ensure sentries have a full view of the disposal site/access areas. Contact sentries to ensure that no non-essential personnel are in the area of operation. Evacuate demolition crew to safe area. Disposal detonation occurs. Inspect the disposal-site to ensure that disposal/venting has been completed properly. WP munitions or suspected WP munitions will be reported to the SUXOS.	Slips, trips, and falls. Biological,Heat/cold stress, Blast hazards Static electricity and EMR. Blast Overpressure, Fragmentation Fire, Eye Injury, Cuts and abrasions WP Munitions	Personnel will be aware of areas they are to be working in and observant of any obstacles, which may present a trip hazard. Establish and maintain communications with the USACE OE Safety Specialist during disposal operations. All UXO workers will be well trained in hazards inherent with MEC operations and in safe operating procedures. Refer to EP 385-1-95a and ER 385-1-95, EM 385-1-97. All UXO workers will be required to wear cotton clothing (under- and outerwear) to reduce the generation of static electricity. Radios will not be used in the area once the pit is primed or during the priming process, unless the radios are at the firing point and the firing line is shunted. Exclusion Zone (EZ) sentries will be posted at access road barricades to prevent all unauthorized personnel from entering the EZ during demolition operations. EZ sentries will maintain communications with the demolition team supervisor during disposal operations. The disposal team will observe fragmentation distances when seeking shelter from blasting. Procedures for disposal operations contained in Chapter 2.0 of the PWP, will be followed at all times. Personnel will observe all precautions for WP munitions in accordance with 60A-1-1-22. Only UXO-qualified personnel will perform MEC operations.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
Donor explosive materials. Electric detonators. Blasting circuits. 2ea 5 gal. water containers with water for fire prevention or snuffing out smoking remnant or white phosphorous round Sand, 5 gal bucket, containers with sand for fire prevention or snuffing out smoking remnant or white phosphorous round 2ea Back Pack fire extinguishers PPE:Modified Level D - Work Clothes - Leather work gloves, - Over the ankle, lace up, leather work boots, - Safety glasses (per ANSI Z87.1-1989), WP PPE: (When required) -Leather gauntlet gloves --Leather sleeved half-jacket -Face Shield	All equipment will be inspected prior to use. If equipment is not in good condition or is not functioning properly, it will be removed from service for repair/replacement. Explosive materials will be inspected to ensure that they are in serviceable condition.	All UXO workers are required to be graduates of one of the schools or courses outlined in DID MR-025. Personnel will receive site-specific training for MEC recognition anticipated at the site. All operators will have current OSHA HAZWOPER training. Employees working on-site will receive medical clearance. All workers will receive supervised OJT from the SUXOS to ensure that they are familiar with safe operating procedures, emergency procedures, and PPE requirements during demolition operations. List of personnel Qualified to perform task will be maintained by UXOSO.

Table 2-10: Performing MEC Inspection Activities

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Performing MEC Inspection Activities**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Thorough inspection of MEC items. Inspected MEC scrap will be placed in a container to prevent commingling with MEC scrap which has not been inspected. Inert (explosive-free) MEC items requiring venting will be set aside for venting to be performed. Live MEC or suspected items will be set aside for disposal, by detonation. WP munitions or suspected WP munitions will be reported to the SUXOS for actions.	Slips, trips, and falls hazards. MEC hazards. Biological hazard. Heat/cold stress hazards. Eye hazards. Cuts and abrasion hazards. WP Munitions	Personnel will be aware of areas they are to be working in and observant of any obstacles, which may present a trip hazard. Personnel will be trained to recognize MEC hazards on-site and be familiar with procedures to be followed if MEC are located. Personnel will observe all precautions for biological hazards. Personnel will observe all precautions for heat/cold stress monitoring. MEC basic safety rules will apply. Minimum number of personnel for efficient operations will be allowed on-site. Cotton clothing will be worn to reduce the potential for static build-up. Leather gloves, at a minimum, will be worn to protect hands. Leather Kevlar™ gloves are highly resistant to tears and cuts from handling sharp objects and may be used. Personnel will be aware of areas they are to be working in and observant of any obstacles, which may present a trip hazard. PPE will be worn at all times. Personnel will observe all precautions for WP munitions in accordance with 60A-1-1-22.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
2eacg 5 gallon water containers with water Empty 5 gallon bucket. PPE: Modified Level D - Work clothes - Leather work gloves - Over the ankle, lace up, leather work boots. - Safety Glasses (per ANSI Z87.1-1989),	All PPE will be inspected prior to use. Defective equipment will be removed from service until repaired/replaced.	All UXO personnel are required to be graduates of one of the schools or courses outlined in DID MR-025. These personnel will also receive site-specific training involving recognition of all types of MEC expected to be found on this site, other anticipated site hazards, and PPE requirements for this site. All operators will have current OSHA HAZWOPER training. Employees working on-site will receive medical clearance.

Table 2-11: Perform Quality Control Activities

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Perform Quality Control Activities**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Using Geophysical detection instruments, perform Quality Control activities. Ensure that there are no surface anomalies within completed grids. Investigate discovered surface anomalies. Report any surface anomalies meeting failure criteria to the SUXOS. WP munitions or suspected	Slips, trips, and falls hazards. MEC hazards. Biological hazards. Heat/cold stress hazards. Eye hazards.	Personnel will be aware of areas they are to be working in and observant of any obstacles, which may present a trip hazard. Personnel will be trained to recognize MEC hazards on-site and be familiar with procedures to be followed if MEC are located. Personnel will observe all precautions for biological hazards Personnel will observe all precautions for heat/cold stress monitoring. Personnel will wear all required PPE. Personnel will operate equipment in a manner consistent with the manufacturer's procedures.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
Geophysical detection instrumentation - MineLab Explorer metal detector PPE: Modified Level D - Work clothes - Leather work gloves. - Over the ankle, lace up, leather work boots. - Safety glasses (ANSI Z87.1-1989).	All equipment is to be inspected daily before use. Equipment is to be calibrated in accordance with the manufacturer's instructions. If equipment is not functioning properly or it is not in useable condition, it is to be turned in for repair/replacement. The metal locator will also undergo a field calibration on a daily basis where the operator, on a test bed, tests it to ensure continued functioning of equipment in the field.	Operator will be trained in the proper use and functions of the geophysical/tracking equipment and in required PPE. All operators will be trained in performing field calibration tests of the metal locators. Personnel will receive site-specific training for MEC recognition anticipated at the site. All operators will have current OSHA HAZWOPER training. Employees working on-site will receive medical clearance.

Table 2-12: Performing Motor Vehicle Operations

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Performing Motor Vehicle Operations**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/ HEALTH HAZARDS	RECOMMENDED CONTROLS
Inspect vehicles to ensure proper working condition. Ensure that vehicles are properly equipped. Explosive materials, when transported, will be loaded and secured to prevent shifting. Conduct motor vehicle operations.	Explosive hazards. Heat stress. Personnel struck by mobile equipment. Vehicle collisions.	Complete motor vehicle inspection form, as required. If the vehicle is not working properly, it will be turned back to the rental agent for repair/replacement. Any vehicle operator on this site is required to have a valid driver's license issued from his state of residence. The driver and all passengers will use safety belts when the vehicle is in operation. The vehicle will be placarded as carrying explosive materials, if required. Operators will be familiar with, and comply with, requirements in this PWP. Explosives, if transported, will be placed securely in the back of the pick-up truck and anchored firmly to prevent movement. Any vehicle with explosive cargo will not be left unattended. The driver will observe all posted speed limits. The driver will ensure that telephone or radio contact is available in the vehicle. Cellular phones will not be used around Flammable Liquids in accordance with OE Safety Group Safety Advisory 03-2003. Operator will obey all local traffic laws and regulations. Operator will obey all company rules and regulations regarding vehicle use.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
Vehicle. Safety Equipment: Seat belts, Two-way radios or cellular telephone, First Aid kits, Emergency eyewash kit, BBP kit, One fire extinguishers rated at 10-B:C (two if transporting explosive materials, Haz-Mat Spill response kit (one per team), and tools for the day's operations Transporting Explosive Materials Explosive placards, if required. Roadside emergency markers. Explosives storage boxes PPE Modified Level D - Work Clothes - Leather work gloves - Over the ankle, lace up, leather work boots. - Safety glasses (ANSI Z87.1-1989).	Vehicle will be inspected daily, prior to use, utilizing the vehicle inspection form in Appendix F of the PWP. Any hazardous conditions noted during the inspection will be repaired prior to using the vehicle. Inspection of the contents of the vehicle will ensure that emergency supplies and communication equipment are readily available. If traveling to a remote location, the inspection of the vehicle will ensure that an adequate supply of drinking water and cups are available. The driver will inspect the packing of explosive materials for transport to ensure segregation of the blasting caps from other explosive items and to ensure anchoring in place and explosives are in a secure position prior to transport.	Any vehicle operator on this site is required to have a valid driver's license issued from his state of residence. All personnel driving or riding as passengers in vehicles will be trained in fire extinguisher usage and will be trained not to attempt to fight any fire involving explosive materials. Personnel will receive site-specific training for MEC recognition anticipated at the site. Personnel will observe all precautions for heat/cold stress monitoring. All operators will have current OSHA HAZWOPER training. Employees working on-site will receive medical clearance. Personnel will receive training in small quantity spill containment cleanup and reporting procedures. Inspection, tests, maintenance, and repairs shall be conducted by a qualified person in accordance with the manufacturer's recommendations. List of personnel Qualified to perform task will be maintained by UXOSO.

Table 2-13: Operations of Utility Vehicle "John Deere Gators™"

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Operation of Utility Vehicle *John Deere Gator™***	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
For the purposes of the section, utility vehicles are defined as specialty Class II ATVs designed to perform off-road utility tasks such as passenger and cargo transportation. Examples are Rangers, Rhino, M-Gators, Gators, and Mules. Inspect the vehicle to ensure proper working condition. Ensure that the vehicle is equipped for the day's operations. Load and secure all equipment to prevent shifting. Conduct vehicle operation. Perform vehicle "post-operation" checks.	MEC hazards. Biological hazards. Heat/Cold stress hazards. Eye hazard. Fire hazard. Handling flammable liquid during fueling. Personnel struck by mobile equipment. Vehicle collisions. Head Hazard.	Complete Gator vehicle inspection form (Appendix F of the PWP). Supervisor and UXOSO are informed of the locations vehicle will be working. Personnel will be trained to recognize MEC hazards and procedures to follow if MEC are located. Even though the John Deere Gator™ is equipped with spark arrestors to prevent accidental fires, all attempts will be made to stop vehicles in an area where accidental fires, from tall grasses igniting from hot engines or exhausts, can occur. Gasoline powered equipment will NOT be fueled while running, hot, or near open flames. Gasoline powered equipment will be taken to a designated fueling point for refueling. Equipment will NOT be started within 3 meters (10 feet) of an open fuel container. All sources of ignition shall be prohibited within 15 meters (50 feet) of operations with a potential fire hazard. Drivers will ensure radio contact is maintained with supervisors. Occupancy in utility vehicles is limited to manufacturer designated seating that has built-in seatbelts. Passengers may not ride in the vehicles back cargo area unless the vehicle is otherwise equipped. Note: When used for emergency response, medical litters may be placed in the back cargo area but must be secured as described below. The manufacturer's recommended load carrying capacity, personnel capacity, or maximum safe vehicle speed shall not be exceeded at any time. Cargo items will be secured as necessary to prevent movement/tipping. All loads over fifty pounds (to include medical litters) must be securely strapped to cargo tie-downs in the rear and to the cargo shelf in the front. Seatbelt use is required while operating utility vehicle by all occupants. Occupancy in utility vehicles is limited to manufacturer designated seating that has built-in seatbelts.Operators and passengers shall wear goggles at all times when a utility vehicle, not equipped with a windshield, is in motion. Utility vehicles will not normally be driven on public roadways except to cross the roadway, and will only be driven on a public roadway at designated crossing points or with a road guard. Utility vehicles that are allowed to operate outside a controlled work area and/or on public roads will meet the minimum vehicle safety standards in accordance with 49 CFR 571.5, to include ROPs, seatbelts and placement of "Slow Moving Vehicle" emblems where required. Manufacturer-installed safety equipment will be maintained in working order and used in compliance with the requirement of EM-385-1-1 and in accordance with manufacturer's recommendations.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
Vehicle (John Deere Gator™). Two-way radio or cell phone PPE: Modified Level D - Working cloths - Leather work gloves. - Over the ankle, lace up, leather work boots. - Safety Goggles (meeting ANSI Z87.1-1989).	Vehicle will be inspected daily prior to use (see Appendix F of the PWP for form). Hazardous conditions noted during the inspection will be repaired prior to using the vehicle. Inspection of the contents of the vehicle will assure that emergency supplies and communication equipment are readily available. If traveling to a remote location, the inspection of the vehicle will assure that an adequate supply of drinking water and cups are available. Utility vehicles shall be equipped with the following (if	Utility vehicle operators shall be trained and familiar with the use of all controls; understand proper moving, stopping, turning and other operating characteristics of the vehicle. Operators must review all training materials provided by the manufacturer for the specific vehicles, and training should be in accordance with appropriate manufacturer recommendations. A copy of the operator's manual shall be kept on the vehicle at all times and protected from the elements. At a minimum, training should address: a. Basic riding tips from the manufacturer's published literature for each vehicle; b. Reading terrain;

ACTIVITY HAZARD ANALYSIS		
DOT Approved Helmet	applicable to the model): a. Operable audible warning device (horn); b. Headlights; c. Taillights; d. Brake lights; e. Seatbelts; and f. ROPS.	c. Climbing hilly terrain; d. Descending a hill; e. Traversing a slope; f. Riding through water; g. Cargo carriers and accessories; h. Loading and unloading; i. Troubleshooting; and j. Proper preventative maintenance, i.e., oil levels, tire pressure requirements and scheduled maintenance requirements according to the manufacturer's guidelines. Personnel operating or riding as passengers in vehicles shall be trained in fire extinguisher usage and shall be trained not to attempt to fight any fire involving explosive materials. Personnel to receive site-specific training for MEC recognition anticipated at the site. Observe all precautions for Biological and Heat/Cold stress hazards. Operators will have current OSHA HAZWOPER training. Employees working on-site will receive medical clearance. List of personnel Qualified to perform task will be maintained by UXOSO.

Table 2-14: Operating Geophysical Instruments

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Operating Geophysical Instruments**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Using a MineLab Explorer metal detector to ensure that there are no anomalies where stakes are to be driven by the geophysical survey team. Using Geophysical detection instruments to assist in locating surface anomalies during surface investigation. Using Geophysical detection instruments, establish working grids. If required, fiberglass pin flags will be used to mark survey lines, MEC, and MEC scrap. Perform the geophysical survey.	Slips, trips, and falls hazards. MEC hazards. Biological hazards. Heat/cold stress hazards. Eye hazards.	Personnel will be aware of areas they are to be working in and observant of any obstacles, which may present a trip hazard. Personnel will be trained to recognize MEC hazards on-site and be familiar with procedures to be followed if MEC are located. Personnel will observe all precautions for biological hazards Personnel will observe all precautions for heat/cold stress monitoring. Operators will wear all required PPE. Personnel will operate equipment in a manner consistent with the manufacturer's procedures. The following precautions shall be followed (Reference: CEHNC Safety Advisory 02-01) Never place an operating geophysical instrument, its electronics, data processor, or battery pack on the ground in an area suspected of containing MEC with electronic fuzing. Do not use conductivity meters around trash piles or trenches that may contain UXO with electronic fuzing. Ground Penetrating Radar (GPR) units shall not be used on sites suspected of containing MEC with electric fuzing.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
Geophysical detection instrumentation MineLab Explorer metal detector. Geonics Mark II EM 61 PPE: Modified Level D - Work clothes - Leather work gloves. - Over the ankle, lace up, leather work boots. - Safety glasses (ANSI Z87.1-1989).	All equipment is to be inspected daily before use. Equipment is to be calibrated in accordance with the manufacturer's instructions. If equipment is not functioning properly or it is not in useable condition, it is to be turned in for repair/replacement. The metal locator will also undergo a field calibration on a daily basis where the operator, on a test bed, tests it to ensure continued functioning of equipment in the field.	Operators will be trained in the proper use and functions of the geophysical/tracking equipment and in required PPE. All operators will be trained in performing field calibration tests of the metal locators. Personnel will receive site-specific training for MEC recognition anticipated at the site. All operators will have current OSHA HAZWOPER training. Employees working on-site will receive medical clearance.

Table 2-15: Dual Saw Operations

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Dual Saw Operations**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Inspect area around operation. Assure the removal of flammable and combustible materials. Inspect equipment to assure it is safe to operate and all equipment adjustments are preformed in accordnance with manufacturer's operation manual. Assure that all personnel protection equipment is available and in good condition Preform dual saw cutting operations Preform post-operation maintenance of equipment.	Fire Hazard Electrical Hazard Eye Hazard Slip,trip and fall Hazard Laceration Hazard	Ensure all operators are trained in proper use of the power band saw. Ensure that all equipment is in good condition and all adjustments are made before starting cutting operations. Remove all flammable and combustible materials from the vicinity of cutting operations. Flammable and combustible materials that cannot be removed will be covered with flame resistantt materials. Ensure an SSHP approved fire extinguisher is readily available during operations. Keep the floor around the machine clean and free of scrap material,oil and grease. Always wear SSHP approved safety glasses and face shield while using this machine. Before operating the machine,remove rings, watches, other jewelry and secure loose clothing and hair. Always keep hands away from the blade when machine is in operation. Do not over reach. Maintain a balanced stance at all times so that you do not fall or lean against blades or other moving parts. Keep machine guards in place at all time when the machine is in use. If removed for maintenance purposes, use extreme caution and replace the guards immediately. Perform all machine adjustments or maintenance with the machine unplugged from the power source.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
Power dual saw Cooling lubricant Cutting blades Adjustment keys and wrenches Fire Extingusher (minimum 2) 4-A:80-B:C PPE: Modified Level D - Work Clothes - Leather work gloves - Over the ankle, lace up, leather work boots - Safety glasses (ANSI Z87.1-1989). - Face shield - Hearing protection	Inspect area around operation. Assure the removal or covering of flammable and combustible materials. Inspect equipment to assure it is safe to operate and all equipment adjustments are performed in accordance with manufactures's operations manual. Power cable is disconnected from power source while performing any maintenance adjustment to the equipment. Equipment will be inspected again after use,before turn-in,in order to detect any deficiencies and correct them before re-issue or use. Fire extinguishers will be inspected and recharged after use. and inspected at least monthly.	Operators will receive hazard communication training,which will instruct them on the hazards and protective measures concerning band saw operations. Operators shall be instructed in the safe use of the equipment. Operators shall be familiar with manufacturer's operation and maintenance manual. Operators will be properly trained in the use of SSHProved fire extinguishers. List of personnel Qualified to perform task will be maintained by UXOSO.

Table 2-16: MEC Scrap Operations

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**MEC Scrap Operations**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Download of MEC scrap Thorough inspection of MEC scrap WP munitions or suspected WP munitions will be reported to the SUXOS for actions. Mutilation of MEC scrap Chop saw & Dual saw cutting of MEC scrap Forklift operations Storage of scrap in barrels Turn in of scrap Storage of hazardous waste and flammables Gas generator use	Overhead hazards Lifting hazards Chemical hazards Vehicle hazards Cut and lacerations hazards Chop saw & Dual saw hazards Forklift hazards Eye hazards Hand hazards Foot hazards Fire hazards Electric hazards Potential WP residue	Assure operators have been trained in the use of all equipment Wear all required PPE Assure all equipment is in good condition Use th e buddy systems for lifting heavy items Use ground guides MEC basic safety ruels Avoid contact with insects and vermin Proper storage of flammable and reactive materials Ergonomically designed tools to reduce stress associated with repetitive motion All personnel are responsible for unsafe conditions in all facets of yard operation and will correct as required Follow all WP precaution inaccordance with 60A-1-1-31

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
Pickup trucks Gators Dual saw Trailers Barrels Baskets and pails Fire extinguishers Gas generator for saw operations 2ea 5 gal. water and sand containers with water and sand for fire prevention or snuffing out smoking remnant or white phosphorous round 1 each empty 5 gallon bucket PPE: Modified Level D - Work Clothes - Leather work gloves - Over the ankle, lace up, leather work boots- Safety glasses (ANSI Z87.1-1989). - Hard hats - Face shield - Hearing protection	Inspect PPE prior to use Inspect equipment prior to use Fire extinguishers are readily available Defective equipment will be removed from service until repaired or replaced All MEC scrap items will be throughly inspected by a minimum of a UXO Technician Level III	Every person that uses equipment will be trained on that equipment and a training form will be signed and placed in the trainees personnel folder Equipment to be trained on - Forklift - Chop saw & Dual saw - Gas generator - John Deer Gator - Proper lifting techniques

Table 2-17: Cutting Operations

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Cutting Operations**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Download of ordnance explosive MEC scrap Through inspection of MEC scrap Mutilation of MEC scrap Chop saw & Dual saw cutting of MEC scrap Forklift operations Storage of scrap in barrels Turn in of scrap Storage of hazardous waste and flammables Gas generator use	Overhead hazards Lifting hazards Chemical hazards Vehicle hazards Cut and lacerations hazards Chop saw & Dual saw hazards Forklift hazards Eye hazards Hand hazards Foot hazards Fire hazards Electric hazards	Assure operators have been trained in the use of all equipment Wear all required PPE Assure all equipment is in good condition Use th e buddy systems for lifting heavy items Use ground guides MEC basic safety ruels Avoid contact with insects and vermin Proper storage of flammable and reactive materials Ergonomically designed tools to reduce stress associated with repetitive motion All personnel are responsible for unsafe conditions in all facets of yard operation and will correct as required

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
Pickup trucks Gators Chop saw & Dual saw Trailers Barrels Baskets and pails Fire extinguishers Gas generator for saw operations PPE: Modified Level D - Work Clothes - Leather work gloves - Over the ankle, lace up, leather work boots - Safety glasses (ANSI Z87.1-1989). - Hard hat when operating the forklift - Face shield when working with dual saw - Hearing protection	Inspect PPE prior to use Inspect equipment prior to use Fire extinguishers are readily available Defective equipment will be removed from service until repaired or replaced All MEC scrap items will be throughly inspected by a minimum of a UXO Technician level III	Equipment to be trained on - Forklift - Chop saw & Dual saw - Gas generator - John Deer Gator Proper lifting techniques List of personnel Qualified to perform task will be maintained by UXOSO.

Table 2-18: Walking in Uneven Terrain

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Walking in Uneven Terrain**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Traversing uneven terrain, hills, and gullies, while utilizing a metal detector	Falling from a mis-step Slipping on rolling rocks Tripping on object sticking out of the ground Twisting joints (ankles, knees, etc.) Blunt trauma from falls (i.e.; hitting knee when falling, etc.)	Personnel shall watch where they are walking at all times and avoid stepping on rocks and uneven surfaces Wear all required PPE. Assure all PPE, especially boots, are in good condition. Slips, trips, and falls and preventative measures will be briefed daily in the mass safety briefing and discussed again during morning tailgate briefings. Team Leaders will determine the best approach for traversing hills to reduce risk exposure. Safety Officer will assist when requested in determing approach and walking paths.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
PPE: Modified Level D - Work Clothes - Leather work gloves - Over the ankle, lace up, leather work boots - Safety glasses (ANSI Z87.1-1989).Additional equipment: - Walking stick (optional) - Knee pads (optional) - Work boots that offer additionalprotection to ankles from twisting and bruising (optional).	Inspect PPE prior to use. Inspect equipment prior to use. Defective equipment will be removed from service until replaced. Safety officer will spot check PPE daily. Terrain will be identified and assessed by Clearance Team UXO Tech III prior to commecement of clearance team operations. Safety Officer will conduct periodic , random and 100% inspection of boots to determine serviceability	Personnel that use equipment will be trained on that equipment Team Leader will brief team daily on physical hazard prevention associated with task. Personnel will be trained on approach and walking methoods, especially for traversing hills (i.e.; approaching from different angles depending upon slope and height) Personnel will be instructed on the need to be vigilant of rocks and other items that can cause a trip or fall.

Table 2-19 Batch Burner Furnace

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Operation of Batch Burner Furnace**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Establish Exclusion zones for non-essential personnel minimum 200 feet Place MEC debris in furnace Heat to a min. of 600^{o}F for 30 minutes An additional 30 min of cook will take place after last sign of any reaction Cool MEC debris for a minimum of 30 minutes before transferring treated material Cool treated material an additional 20 min once removed from burner Thermal operations will cease when winds are 15 mph and above Test MEC debris for explosive residue Photograph and log results Small arms will be heated to 650^{o}. When 5 minutes has elapsed from the last audible round cook off, heat for an additional 5 minutes.	Unintentional detonation Heat Stress Exposure Unintentional burns Unintentional fires Back Injury from improper lift technique	Ensure MEC debris is certified MDAS prior to placement in furnance. Suspect items will not be placed in furnace and shall be destroyed by detonation. Assure all PPE are in good condition. Minimize exposure to furnace during operations Wear required PPE throughout the procedure. All Safety Guards will be in place prior to operation. Area used for thermal treatment operations will be cleared of combustible material in a 50ft radius Exclusion zone for all non-essential personnel will be 200ft. Cannot be used when wind speed 15 MPH or greater

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
Batch Burner 2 each 3A40BC fire extinguishers Large 15 min. eye wash station or equivalent EXPRAY Test Kit PPE : - Modified Level D - Welders gauntlet gloves - Leather apron with full length sleeves- - Over the ankle, lace up, leather work boots - Safety glasses (ANSI Z87.1-1989). - Hearing protection as required - Face Shield	Inspect PPE prior to use Inspect equipment prior to use Defective equipment will be removed from service until replaced Safety officer will conduct random spot check PPE and safety equipment Ensure weather conditions remain favorable for operations	Operators will be trained in the proper use and functions of equipment used in Batch Burner Furnace operations and in required PPE. Operators will be trained in the use of fire extinguishers, eye wash station and fire blanket. Operators wil be tained in use of the EXPRAY Test Kit Operators will be trained in the storage and handling of gas cylinders IAW 385-1-1 Operators are trained on proper lift techniques List of personnel Qualified to perform task will be maintained by UXOSO.

Table 2-20 Open Front Barricade Operations

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Open Front Barricade Operations**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
When required position Open Front Barricade (OFB) over unknown anomaly to shield people and property from unintentional detonation Establish exclusion zones for non-essential personnel minimum 300 feet on three sides and HFD for suspected ordnance Use two tag lines to control movement of OFB while suspended from forklift	Slips, trips, and falls Biological hazards. Heat/cold stress hazard. Noise hazard. Eye hazard. Head hazard. Cuts and abrasions hazard. Crush and pinch point hazard. Exhaust from equipment Unintentional detonation MHE Roll over	Utilize Walking on Uneven Terrain AHA Wear all required PPE Team Leaders will determine the best approach for traversing the terrain to reduce risk exposure while driving the forklift Safety Officer will assist when requested in determing approach and walking paths All personnel will be aware of areas to be worked in and observant of obstacles, which preclude driving the forklift Personnel will observe all precautions for biological hazards. Personnel will observe all precautions for heat/cold stress monitoring.. Ensure that heavy equipment is clear of any obstructions prior to starting. Keep hands, fingers, and feet clear of moving parts. Each operator will receive proper training in equipment use and will maintain the equipment in good condition. Personnel will operate equipment in a manner consistent with the manufacturer's procedures When lifting the OFB with the GEHL, the boom extends outward with two orange marks on the boom – at eight feet and at fourteen feet. The eight foot mark is optimum and the fourteen foot mark is DO NOT EXCEED with the OFB. Optimum boom angle is between 25 and 30 degrees. Follow recommended controls as described in Heavy Equipment Operations AHA. Do not walk under extended boom

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
Additional equipment: Gehl 663 All Terrain Forklift Open Front Barricade Hand digging tools PPE: - Modified Level D - Work Clothes - Leather Work Gloves - Over the ankle, lace up, leather work boots with safety toe. - Safety glasses(ANSI Z87.1-1989). - Hearing protection	Inspect PPE prior to use Inspect equipment prior to use Inspect slings prior to use Defective equipment will be removed from service until repaired or replaced Terrain will be examined and assessed by Clearance Team UXO Tech III prior to commencement of OFB operations.	Every person that uses equipment will be trained on that equipment Operators will only be qualified personnel according to the requirements of the EM 385-1-1 and be trained in the safe use of required equipment and in the required PPE. All personnel will receive training on the site-specific hazards to be encountered. All operators will have current OSHA HAZWOPER training. Employees working on-site will receive medical clearance List of personnel Qualified to perform task will be maintained by UXOSO.

Table 2-21 Chop Saw Operations

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Chop Saw Operations**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Inspect area around operation. Assure the removal of flammable and combustible materials. Inspect equipment to assure it is safe to operate and all equipment adjustments are preformed in accordance with manufacturer's operation manual. Assure that all personnel protection equipment is available and in good condition Perform chop saw cutting operations Perform post-operation maintenance of equipment Establish Exclusion zones for non-essential personnel minimum 200 feet	Fire Hazard Electrical Hazard Eye Hazard Slip, trip and fall Hazard Laceration Hazard Unintentional detonation	Ensure all operators are trained in proper use of the chop saw. Ensure that all equipment is in good condition and all adjustments are made before starting cuttingoperations. Remove all flammable and combustible materials from the vicinity of cutting operations. Flammable and combustible materials that cannot be removed will be covered with flame resistantmaterials. Ensure fire extinguisher is readily available during operations. Keep the floor around the machine clean and free of scrap material, oil and grease. Always wear safety glasses and face shield while using this machine. Before operating the machine, remove rings, watches, other jewelry and secure loose clothing and hair. Always keep hands away from the blade when machine is in operation. Do not over reach. Maintain a balanced stance at all times so that you do not fall or lean against blade. Keep machine guards in place at all time when the machine is in use. If removed for maintenance purposes, do not use equipment until the guards are replaced. Perform all machine adjustments or maintenance with the machine unplugged from the power source. Certified 5X inspection prior to operations.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
Power Chop saw Adjustment keys and wrenches Fire Extinguisher Eye Wash station at site PPE: - Modified Level D - Work Clothes - Leather work gloves - Leather work gloves - Over the ankle, lace up, leather work boots - Safety glasses (ANSI Z87.1-1989). - Face shield - Double Hearing protection	Inspect PPE prior to use Inspect area around operation. Assure the removal or covering of flammable and combustible materials. Inspect equipment to assure it is safe to operate and all equipment adjustments are performed in accordance with manufacturer's operations manual. Power cable is disconnected from power source while performing any maintenance adjustment to the equipment. Equipment will be inspected again after use, before turn in, in order to detect any deficiencies and correct them before next use. Fire extinguishers will be charged and inspected.	Operators will receive chop saw operations training according with manufacturer's operation and maintenance manual, and the guide to chop sawing operations Operators will be properly trained in the use of fire extinguishers. List of personnel Qualified to perform task will be maintained by UXOSO.

Table 2-22 Deformation – Cutting Operations

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**DEFORMATION – CUTTING OPERATIONS**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Establish exclusion zones for non-essential personnel minimum 200 feet. Download of MEC scrap Thorough inspection of MEC scrap Mutilation of MEC scrap Dual saw cutting Chop saw cutting Storage of scrap in barrels Turn in of scrap Gas generator use	Lifting hazards Chemical hazards Vehicle hazards Cut and lacerations hazards Eye hazards Hand hazards Foot hazards Fire hazards Unintentional detonation	Operators are trained in proper lift techniques. Use the buddy system to assist each other. Operators have been trained in the use of all equipment Operators will assure all equipment is in good condition Operators will wear all required PPE Operators will be trained on fire extinguisher use. MEC debris will be certified 5X prior to operations. Use buddy system for all lifting over 40 pounds Keep work area clear of any obstructions

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
Pickup trucks Band saw Chop Saw Fire extinguishers Gas generator PPE: - Modified Level D - Work Clothes - Leather Work Gloves - Over the ankle, lace up, leather work boots - Safety glasses (ANSI Z87.1-1989). - Hard hats - Face shield - Double hearing protection - Eye wash station	Inspect PPE prior to use Inspect equipment prior to use Fire extinguishers are readily available Eye was station is readily available Defective equipment will be removed from service until repaired or replaced All MEC scrap items will be certified 5X treated Keep work area clear of any obstructions	Operators will be instructed in the safe use of the equipment. Operators will be familiar with manufacturer's operation and maintenance manual for the band saw, chop saw and gas generator. Operators will be properly trained in the use of fire extinguishers. Operators will be trained on proper lift techniques. Operators will be trained in eye wash station use List of personnel Qualified to perform task will be maintained by UXOSO.

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Table 2-23 Mobile Expended Ordnance Deformer

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**DEFORM AMMUNITION CASINGS**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Establish exclusion zones for non-essential personnel minimum 200 feet. Download of MEC scrap Thorough inspection of MEC scrap Mutilation of MEC scrap as per SOP Storage of scrap in barrels Turn in of scrap	Lifting hazards Cut and lacerations hazards Eye hazards Hand hazards Foot hazards Noise hazards Pinch Points	Operators are trained in proper lift techniques. Use the buddy system to assist each other. Operators will wear all required PPE Operators have been trained in the use of all equipment and emergency shutdown procedures. Operators will assure all equipment is in good working condition Operators will be trained on fire extinguisher use. MEC debris will be certified 5X prior to operations. Do not reach into hopper or touch conveyor belt during operation. Stop machine before attempting to clear obstructions Do not wear loose clothing or jewelry around machine to avoid getting caught in moving parts

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
Mobile Expended Ordnance Deformer Fire extinguishers PPE: - Modified Level D - Work Clothes - Leather work gloves - Over the ankle, lace up, leather work boots - Safety glasses (ANSI Z87.1-1989). - Hard hats - Double hearing protection	Inspect PPE prior to use Inspect equipment prior to use Fire extinguishers are readily available Defective equipment will be removed from service until repaired or replaced All MEC scrap items will be certified 5X treated	Operators will be instructed in the safe use of the equipment. Operators will be instructed on emergency shutdown procedures Operators will be familiar with manufacturer's operation and maintenance manual for the Mobile Expended Ordnance Deformer Operators will be properly trained in the use of fire extinguishers. Operators will be trained on proper lift techniques. List of personnel Qualified to perform task will be maintained by UXOSO.

Table 2-24 Vegetation Clearance (Grubbing) Operations

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Vegetation Clearance (Grubbing) Operations**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Identify location of vegetation that needs to be cut. Use weed whackers to cut grasses and light brush Use chain saw to cut tree limbs and heavy brush up to 3 inches in diameter and not more than 4 feet above ground Chain saw operator will have an assistant pull limbs away to a cleared area	Identify location of vegetation that needs to be cut. Use weed whackers to cut grasses and light brush Use chain saw to cut tree limbs and heavy brush up to 3 inches in diameter and not more than 4 feet above ground Chain saw operator will have an assistant pull limbs away to a cleared area Unintentional Detonation Handling flammable liquid during fueling.	All personnel will follow AHA 2-18 guidance Wear all required PPE and assure all PPE is in good working condition All personnel will operate equipment within guidelines provided by manufacturer's operating manual Maintain equipment in good working order Start equipment on clear, level ground, then enter cutting area after equipment has been started Operators will fuel equipment in a designated area as directed by Team Leader Use Minelab to clear area prior to cutting brush and grass Use air horn to alert team in case of emergency Only UXO-qualified personnel will perform MEC operations. Gasoline powered equipment will NOT be fueled while running, hot, or near open flames. Gasoline powered equipment will be taken to a designated fueling point for refueling. Equipment will NOT be started within 3 meters (10 feet) of an open fuel container.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
Weed Whackers with blades or string Chain saws Lawnmowers Hedge Trimmers Machettes Fuel Cans Fire Extinguishers Air Horn PPE: Modified Level D - Work Clothes - Leather work gloves - Over the ankle, lace up, leather work boots - Safety glasses (ANSI Z87.1-1989). - Helmet with attached hearing protection and mesh face shield - Safety boots and Chaps required for chain saw operations	Inspect PPE prior to use Inspect equipment prior to use Defective equipment will be removed from service until replaced Terrain will be identified and assessed by Clearance Team UXO Tech III prior to commecement of grubbing operations Safety Officer will conduct random inspeciton of boots to determine serviceablility	Operators will be trained on all equipment and emergency shut down procedures Operators will be trained in donning and doffing PPE Operators will be trained in fire extinguisher use List of personnel Qualified to perform task will be maintained by UXOSO.

Table 2-25 Miniature Open-Front Barricade (MOFB)

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Miniature Open Front Barricade Operations**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
When required position the Miniature Open Front Barricade (MOFB) over unknown anomaly to shield people and property from unintentional detonation Establish exclusion zones for non-essential personnel on the three protected sides and HFD for the MGFD for the open side IAW the WMA ESS, Appendix M of the PWP, for the specific response area.	Slips, trips, and falls Biological hazards. Heat/cold stress hazard. Noise hazard. Eye hazard. Head hazard. Cuts and abrasions hazard. Crush and pinch point hazard. Exhaust from equipment Unintentional detonation MHE Roll over	Utilize Walking on Uneven Terrain AHA Wear all required PPE Team Leaders will determine the best approach for traversing the terrain to reduce risk exposure while placing the MOFB Safety Officer will assist when requested in determing approach and walking paths All personnel will be aware of areas to be worked in and observant of obstacles Personnel will observe all precautions for biological hazards. Personnel will observe all precautions for heat/cold stress monitoring Personnel will observe all precautions for John Deere Gator operations Ensure that heavy equipment, if used, is clear of any obstructions prior to starting Keep hands, fingers, and feet clear of moving parts Each operator will receive proper training in equipment use and will maintain the equipment in good condition Follow recommended controls as described in Heavy Equipment Operations and Operation of Utility Vehicles AHA's Personnel will operate equipment in a manner consistent with the manufacturer's procedures Do not walk under extended boom

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS
Additional equipment: John Deere Gator GEHL Fork Lift Miniature Open Front Barricade Hand digging tools PPE: - Modified Level D - Work Clothes - Leather Work Gloves - Over the ankle, lace up, leather work boots with safety toe - Safety glasses(ANSI Z87.1-1989). - Hearing protection when required	Inspect PPE prior to use Inspect equipment prior to use Defective equipment will be removed from service until repaired or replaced Terrain will be examined and assessed by Clearance Team UXO Tech III prior to commencement of MOFB operations.	Every person that uses equipment will be trained on that equipment Operators will only be qualified personnel according to the requirements of the EM 385-1-1 and be trained in the safe use of required equipment and in the required PPE. All personnel will receive training on the site-specific hazards to be encountered. All operators will have current OSHA HAZWOPER training. Employees working on-site will receive medical clearance List of personnel Qualified to perform task will be maintained by UXOSO.

Table 2-26 General Mechanized Hand Tool Operations

ACTIVITY HAZARD ANALYSIS			
ACTIVITY	**Mechanized Hand Tool Operation**	**ANALYZED BY/DATE**	David Gerow / April 31, 2011

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Inspect area around operation. Assure the removal of flammable and combustible materials. Inspect equipment to assure it is safe to operate and all equipment adjustments are preformed in accordance with manufacturer's operation manual. Assure that all personnel protection equipment is available and in good condition Perform post-operation maintenance of equipment	Lifting hazards Vehicle hazards Cut and lacerations hazards Eye hazards Ear hazards Hand hazards Foot hazards Fire hazards Handling flammable liquid during fueling.	Operators are trained in proper lift techniques. Use the buddy system to assist each other. Operators have been trained in the use of all equipment Operators will assure all equipment is in good condition Operators will wear all required PPE Operators will be trained on fire extinguisher use. Use buddy system for all lifting over 40 pounds Keep work area clear of any obstructions Operator will follow all recommended manufacturer safety, inspection and operation procedures Gasoline powered equipment will NOT be fueled while running, hot, or near open flames. Gasoline powered equipment will be taken to a designated fueling point for refueling. Equipment will NOT be started within 3 meters (10 feet) of an open fuel container.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENT	TRAINING REQUIREMENTS

Jack Hammer Electric Power Drill Pneumatic Power Drill Abrasive Wheel Portable Gas Generator Portable Air Compressor Fuel container PPE: - Modified Level D - Work Clothes - Leather Work Gloves - Over the ankle, lace up, leather work boots - Safety glasses (ANSI Z87.1-1989). - Hard hats - Face shield - Double hearing protection - Eye wash station -Fire extinguishers -First Aid Kit	Inspect PPE prior to use Inspect equipment prior to use Fire extinguishers are readily available Eye wash station is readily available Defective equipment will be removed from service until repaired or replaced Keep work area clear of any obstructions	Operators will be instructed in the safe use of the equipment. Operators will be familiar with manufacturer's operation and maintenance manuals for all power tools. Operators will be properly trained in the use of fire extinguishers. Operators will be trained on proper lift techniques. Operators will be trained in eye wash station use List of personnel Qualified to perform task will be maintained by UXOSO.

2.2 Classic Safety Hazards

Due to the nature of planned site operations, the potential risk for exposure to safety hazards is high. Anticipated Safety hazards, which may be encountered during site activities and precautions, to be followed are listed below and in individual Activity Hazard Analyses. **The prevention of fire is a primary concern for this project; therefore, all on-site smoking activities shall be prohibited.**

2.2.1 Slips, Trips, and Fall Hazards

Site conditions consist of light to moderate terrain, light to moderate-heavy brush, which make the possibility of slips, trips, and fall hazards high during the MEC escort, establishing working grids, surface sweep, geophysical survey, and quality control activities. Site personnel shall be instructed to make themselves aware of the placement of their feet at all times to avoid site conditions, which attribute to slips, trips, and falls.

2.2.2 Cuts/laceration Hazard from Handling Sharp Surfaces on MEC Scrap

MEC scrap surfaces can be expected to have sharp and rusted surfaces. Project personnel should expect a high likelihood of cuts/lacerations if proper care is not taken. During all activities involving the handling of MEC, MEC scrap, and site materials, personnel shall wear leather work gloves to prevent injury to hands.

2.2.3 Pinched/Crushed Fingers and Toes from Handling MEC Scrap

2.2.3.1 The weight of MEC scrap expected to be recovered and handled during surface sweep and MEC inspection activities is expected to pose only a light to moderate hazard to fingers and toes. The mishandling of even light materials can cause injuries to site personnel. All site personnel are required to wear leather work boots and gloves while activities are being conducted. Personnel shall utilize proper lifting techniques and when appropriate, shall use additional personnel or material handling equipment for heavy objects.

2.2.4 Inclement Weather

2.2.4.1 Inclement weather is considered hazardous if it impairs a workers ability to conduct operations (i.e., fog and heavy rain, reduced visibility to see work area). Personnel will not continue operations if visibility is greatly affected. During heavy rain, personnel can be at risk due to flash floods, visibility, and instability while walking. The UXOSO will make recommendations to the SUXOS to determine

risk hazards. Thunder/lightning storms are a high-risk hazard to all site personnel especially during disposal operations. All blasting activities shall be suspended when an electrical storm approaches to within 10 miles of the site. Site personnel, in the open, are at great risk and shall be moved to safe sheltered locations until the storm has passed. Local weather forecasts or visual determinations will serve as notice that potential inclement weather is approaching.

2.2.4.2 The UXOSO will monitor weather as a requirement and has cell phone and/or radio connectivity with SUXOS at all times. When there is a potential for severe weather the UXOSO monitors the State of Hawaii Civil Defense website, the National Weather Service website, and local AM/FM radio stations. If the UXOSO is in the field and there is the potential for severe weather, he will monitor local AM/FM radio in which civil defense broadcasts severe weather alerts, earthquakes, range fires, major traffic accidents, etc. Should conditions deteriorate to an unsafe condition, UXOSO will advise SUXOS to cease work until conditions improve and notify OESS of such action.

2.3 Explosive Ordnance and Explosives

2.3.1 Detonation of Donor Explosives

2.3.1.1 Donor explosives will be stored in temporary magazines, and transferred on site as needed. General rules for disposal and post disposal operations include reviewing electromagnetic radiation hazards and precautions and electrical grounding procedures, and carrying blasting caps in Approved containers and keeping them out of direct sunlight. Specific rules for these operations are presented in Section 2.4 of the PWP.

2.3.2 Flammable/Explosive Hazards from Fueling and Maintenance of Site Vehicles

2.3.2.1 The chance of fire and/or explosion during vehicle refueling and maintenance is high when improper procedures are taken. All site vehicles will be equipped with a portable fire extinguisher readily available to fight a fire. Equipment will never be refueled on the back of a pick-up truck with a bed liner.

2.4 Chemical Hazards

2.4.1.1 The only anticipated chemical hazards, which would be expected during site activities are those fuels and oils bought on-site, for equipment maintenance. All site personnel will follow the procedures and precautions outlined in appropriate Task Hazard Analysis. All project personnel will be trained in the Hazard Communications Program required by OSHA. CWM procedures are outlined in Section 10.3.3.10.

2.5 Physical Hazards

2.5.1.1 For the planned site activities to be conducted, the potential for exposure to physical hazards is high for this project. The physical hazards that may be encountered during site operations and precautions to be taken are listed below.

2.5.2 Heavy Equipment Hazard

2.5.2.1 Operating or moving heavy equipment incorrectly can cause serious injury. Operating and safety procedures will be in accordance with excerpts from Section 16 of the EM 385-1-1, Machinery and Mechanized Equipment. Tables 2-8 and 2-13 contain AHA's which include all heavy equipment to be used on this site. Heavy equipment to be used for this project will be the Gehl Dynalift 663 all terrain forklift, bush hog, front loader and/or forklift attachments, John Deere 110 tractor, with backhoe and front loader. All equipment used on site will be inspected, operated and maintained in accordance with manufacturer's operating recommendations. All personnel participating in the operation or maintenance of heavy equipment will be trained on the specific equipment to be used in accordance with manufacturer recommended guidelines. Heavy equipment utilized on-site will be operated under strict adherence to the applicable OSHA regulations found in OSHA 29 CFR 1910; OSHA 29 CFR 1926; the requirements of USACE EM 385-1-1, Section 18; and the Project Site Safety and Health Plan.

2.5.2.2 If excavating with a backhoe, or any mechanized equipment, where development has occurred, the local utility companies will be contacted and proper protocols observed, both operationally and safely, based on the utilities that may be present. The State of Hawaii has a One Call Center for all digging activities, 1-866-423-7287, which covers requests for the entire state. A location request will be made through the SUXOS prior to excavation activities.

2.5.2.3 The Heavy Equipment SOP, Pre-Start Check List, and procedures for each piece of equipment expected for use on the WMA project can be found in Attachment D-1-A of this Document.

2.5.3 Material Lifting Hazard

2.5.3.1 The lifting and handling of MEC and MEC scrap can have a high probability of causing back strain, pulled muscles and tendons. Personnel will utilize proper lifting techniques when moving site materials. Proper lifting technique training will be given as part of the site specific training, daily safety brief and weekly supervisor safety brief. When required for heavier items to move, additional personnel or material handling equipment shall be used.

2.5.4 Noise Hazard

2.5.4.1 The operation of heavy equipment, powered hand tools and demolition operations may create a noise hazard to site personnel. Site personnel working with or near heavy equipment, powered hand tools, or demolition operations will wear hearing protection as directed by the UXOSO. Noise monitoring will be conducted by the UXOSO with a decibel meter if a new piece of equipment is introduced into the project in order to determine if hearing protection is needed. Please refer to Table 6-1 for specific guidance.

2.6 Ionizing Radiation Hazards

2.6.1 In accordance with previous activities performed at the project a radiological hazard is not anticipated within the project area.

2.7 Biological Hazards

2.7.1 Biological hazards, which are usually found on-site, include insects, such as mosquitoes, spiders, bees, and centipedes; dangerous animals; hazardous plants; and microorganisms. Employee awareness and adherence to the safe work practices outlined in the following sections should reduce the risks associated with these hazards.

2.7.2 Hazardous Plants

2.7.2.1 During the conduct of site activities, the number and variety of hazardous plants that may be encountered are few. The plants with the greatest degree of risk, to site personnel (i.e., potential for contact versus effect produced), are those, which produce skin reactions and skin and tissue injury.

2.7.2.2 Some poisonous plants that maybe encountered could include apple of Sodom (Solanum sodomeum), black-eyed susan (Arbus precatorius), castor bean plant (Ricinus communis), coral plant (Jatropha multifida), crown flower (Calotropis gigantean), Jimson weed (Datura stamonium), oleander (Nerium oleander), pencil plant (Euphorbia tirucalli), physic nut (Jatropha curcas), poionsettia (Euphorbia pulcherrima), and Star-of-Bethlehem (Hippobroma longiflora).

2.7.3 Plants Causing Skin and Tissue Injury

2.7.3.1 Contact with splinters, thorns, and sharp leaf edges is of special concern to site personnel, as is the contact with the pointed surfaces found on branches, limbs, and small trunks left by site clearing and grubbing crews. The Kiawe tree, which has large sharp and strong thorns may be encountered. This concern stems from the fact that punctures, cuts, and even minor scrapes caused by accidental contact may result in non-infectious skin lesions and the introduction of fungi, or bacteria, through the skin or eye. Personnel receiving any of the injuries listed above, even minor scrapes, will report immediately to the UXOSO for initial and continued observation and care of the injury.

2.7.3.2 Plants Causing Skin Reaction

2.7.3.3 It is not anticipated that plants found on-site will cause skin reactions like poison ivy, oak or sumac. At this time, there are no known poisonous plants of concern that site personnel should encounter. Prior to the start of site operations, the UXOSO will consult with local resources to determine if any plants are on-site that could cause these types of reactions and will provide a full briefing to site personnel during the initial site training.

2.7.4 Snakes

2.7.4.1 There are no native snake species associated with the Hawaiian Islands. With the very rare exception of possibly encountering a brown tree snake (an alien snake species that periodically invades the Hawaiian Islands from Guam), there is virtually no potential for site personnel to encounter a snake during site operations. In the highly unlikely event that any snakes are encountered, by on-site personnel, the location of the snake will be recorded and USACE OE Safety Specialist will be notified immediately.

2.7.5 Spiders

2.7.5.1 A large variety of spiders may be encountered during site activities. While most spider bites merely cause localized pain, swelling, reddening, and in some cases, tissue damage, there are a few spiders, which, due to the severity of the physiological effects caused by their venom, are dangerous. These species include the black widow and the brown or violin spiders. Table 2-25 provides descriptions of these spiders.

2.7.5.2 Victims of a black widow bite may exhibit the following signs or symptoms:

- the sensation of a pin prick or minor burning at the time of the bite;
- the appearance of small punctures (but sometimes none are visible); and
- after 15 to 60 minutes, intense pain is felt at the site of the bite, which spreads quickly, and is followed by profuse sweating, rigid abdominal muscles, muscle spasms, breathing difficulty, slurred speech, poor coordination, dilated pupils, and generalized swelling of the face and extremities.

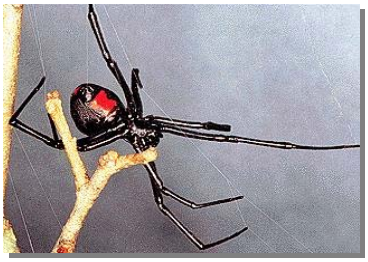
2.7.5.3 Victims of a brown, or violin, spider bite may exhibit the following signs or symptoms:

- blistering at the site of the bite, followed by a local burning at the site 30 to 60 minutes after the bite;
- formation of a large, red, swollen, postulating lesion with a bull's-eye appearance;
- systemic effects may include a generalized rash, joint pain, chills, fever, nausea, and vomiting; and
- pain may become severe after 8 hours, with the onset of tissue necrosis.

2.7.5.4 There is no effective first aid treatment for either of these bites. Except for very young, very old or weak victims, these spider bites are not considered to be life threatening; however, medical treatment must be sought immediately to reduce the extent of damage caused by the injected toxins.

2.7.5.5 The UXOSO will brief site personnel as to the identification and avoidance of the spiders. As with stinging insects, site personnel will report to the UXOSO if they locate either of these spiders on-site or notice any type of bite while involved in site activities.

Table 2-27: Dangerous Spider Descriptions

Name	Photograph	Description
Black Widow	 	The black widow, is a coal-black bulbous spider 3/4 to 1 1/2 inches in length, with a bright red hourglass on the underside of the abdomen. The black widow is usually found in dark moist locations, especially under rocks, rotting logs and may even be found in outdoor toilets where they inhabit the underside of the seat. Victims of a black widow bite may exhibit the following signs or symptoms: - Sensation of pinprick or minor burning at the time of the bite. - Appearance of small punctures (but sometimes none are visible). - After 15 to 60 minutes, intense pain is felt at the site of the bite which spreads quickly, and is followed by profuse sweating, rigid abdominal muscles, muscle spasms, breathing difficulty, slurred speech, poor coordination, dilated pupils and generalized swelling of face and extremities.
Brown Recluse	 	The brown or violin spider is brownish to tan in color, rather flat, 1/2 to 5/8 inches long with a dark brown "violin" shape on the top. Of the brown spider, there are three varieties found in the United States that present a problem to site personnel. These are the brown recluse, the desert violin and the Arizona violin. Victims of a brown recluse bite may exhibit the following signs or symptoms: - Blistering at the site of the bite, followed by a local burning at the site 30 to 60 minutes after the bite. - Formation of a large, red, swollen, postulating lesion with a bull's-eye Appearance. - Systemic effects may include a generalized rash, joint pain, chills, fever, nausea, and vomiting. - Pain may become severe after 8 hours, with the onset of tissue necrosis.

2.7.6 Ticks and Mosquitoes

2.7.6.1 There are two species of ticks endemic in Hawaii, the brown dog tick (Rhipocephalus sanguineus) and the cattle ear tick (Otobiius megnini), neither of which is known to transmit human disease, although cattle ear tick bites have been associated with otoacariasis (ear mites). On occasion, disease-transmitting tick spices have been found on dogs in the animal quarantine station, but have been destroyed. As a result, the following diseases transmitted by ticks are not found in Hawaii: Rocky Mountain Spotted Fever, Tularemia, Ehrlichosis and Lyme Disease. There are currently no mosquito-borne infectious diseases endemic in the State of Hawaii.

2.7.7 Bees and Wasps

2.7.7.1 There are several types of bees and wasps, which may be encountered during site activities. These include the Western Yellow Jacket, Common Yellow Jacket, Paper Wasps, Honey and Carpenter bees. Bees are generally not as aggressive as wasps and hornets. Most stinging insects are relatively safe to be near, even in large numbers, so long as they are not aggravated. However, dozens of people a year die from insect stings, mostly due to anaphylactic shock, some as a direct result of the toxins. However, bee venom appears to contain more proteins than wasp venom and therefore there is a greater likelihood of being allergic to bees than wasps. The sting of bees and wasps are quite different. The wasp may sting a victim multiple times and still live. The bee will sting once, tearing itself away leaving the stinger embedded and still connected to the venom sac, which continues to pump venom into the victim for up to a minute from the time of insertion.

2.7.8 Prevention of Bee and Wasp Stings

2.7.8.1 The following precautions will be taken during field activities for the prevention of stings from bees and wasps:

- Be aware of the presence of bees and wasps while you are working especially in the vicinity of flowers. Bees tend to sting if they feel threatened or are disturbed, so use caution.
- Avoid wearing floral patterns or using floral scents, which will attract bees.
- Personnel that are sensitive to bees must make the UXOSO aware of this and should carry a bee sting kit with them.
- If bees or wasps get trapped inside your vehicle while you are driving, pull of the shoulder and let the creature escape before you continue driving.
- Only strike a wasp if you are sure to kill it. If you strike or kill a bee you will set off its defense pheromone, which will attract other bees to attack.

- In the event of a massed sting attack, try to stay calm, cover your head if possible Get into anything that is sealed in such a way as not to allow insect entry, such as a vehicle.

2.7.8.2 Treatment of Normal Insect Stings. All bee stings include an alarm pheromone, which incites their mates to attack, so the primary response for treatment of a normal bee sting is to get away from a nest/hive with all speed. Scrape or pull out stings as soon as possible. A honeybee sting has a pump attached that continues to introduce venom for 1 minute after stinging. A wasp does not leave its stinger. apply an ice pack to minimize swelling and pain. Lift limb to heart level to reduce swelling.

2.7.8.3 Treatment of Severe Reaction to Insect Stings. If the victim has been stung multiple times, is young or old, or is one of the 1% that is hyper-allergic to stings called anaphylactic shock. . Signs of anaphylactic shock may include:

- localized swelling and redness at sting area,
- headache,
- fever;
- nausea;
- vomiting;
- swelling of the tongue or throat;
- difficulty in breathing;
- increased heart beat rate,
- drowsiness; and/or
- unconsciousness.

If any of these signs appear, seek immediate medical help.

2.7.8.3.1 Personnel with known sensitivity to stings and who have an EPIPEN should have it administered, followed by an ice pack and transit to the hospital. Employees on the site who know they are allergic to bee stings should make the UXOSO and co-workers aware of that fact, and should have their EPIPEN with them at all times. Co-workers should know where the kit is located and how to administer it in an emergency.

2.7.9 Scorpion (Lesser Brown)

2.7.9.1 Hawaii has one form of scorpion, the Lesser Brown (Table 2-19). Its Hawaiian name is Kopiana. Its sting is not considered dangerous, about the intensity of a bee

sting. Its distribution is on the islands of O`ahu, Maui, Kaua`i, and the Island of Hawaii, and therefore may be seen in the areas covered by the PWS.

Table 2-28: Lesser Brown Scorpion Description

Name	Photograph	Description
Lesser Brown Scorpion (*Isometrus maculates)*		• Long curved tail with stinger and 10-legs. • Smaller than Emperor scorpions, under 3 inches at their largest. • Found in Hawai'i since 1880. Scorpions prefer to live in warm areas. They are nocturnal creatures. They hunt and feed during the night while they rest during the day, hiding beneath loose rocks, loose bark of fallen trees, boards, piles of lumber, floors of outbuildings, and debris. Despite its appearance, this is not a deadly enemy. It has a painful sting, but it does not have a neurotoxin like some of its mainland cousins, so the sting is more like that of a bee. The poison of the non-deadly species of scorpions is local in effect and causes swelling and discoloration of the tissues in the area of the puncture. There will be intense pain at the site of the sting but very little inflammation or swelling but these symptoms usually disappear after 24 hours. In Hawaii, there have been no reported fatalities due to scorpion stings.

2.7.10 Rats/Mice

2.7.10.1 Rats and mice may be found at the site. Hantaviruses are transmitted by mice, but have not been associated with the species of mouse present in Hawaii. The disease has never been diagnosed here (Hawaii Department of Health, Communicable Disease Division).

2.7.11 Mongooses and Bats

2.7.11.1 Mongooses and bats are known vectors of rabies in other areas, a disease that has not entered the State by virtue of the Department of Agriculture's animal quarantine program for incoming pets. (Hawaii Department of Health, Communicable Disease Division).

Section 3 Staff Organization, Qualification, and Responsibilities

3.1 General

All site operational and other personnel having exposure potential to site hazards are subject to the requirements of this SSHP. Work may not be performed in a manner that conflicts with the intent of, or the inherent safety, health, or environmental precautions expressed in this SSHP. The safety and health requirements listed in this SSHP may change as site work progresses; however, no changes will be made that would lower the inherent safety, health, or environmental precautions expressed in this SSHP without Approval of the United States Army Engineering and Support Center, Huntsville (USAESCH).

3.1.1 Safety and Health Expectations, Incentive Programs, and Compliance

3.1.1.1 The goal of the Contractor is zero mishaps. Compliance with this SSHP is mandatory and non-compliance will be grounds for removal from the site. There are no incentive programs for safety and health expectations.

3.1.1.2 Figure 1-1 shows the key project personnel for the project and the health and safety lines of authority.

3.1.2 Safety and Health Manager

3.1.2.1 The Safety and Health Manager (SHM) will be David Gerow, a Certified Industrial Hygienist (CIH) and Certified Safety Professional (CSP), of Kauai Environmental. Mr. Gerow's resume is presented in Appendix H of the PWP. The responsibilities of the SHM are listed below:

Develop, maintain, and oversee implementation of the SSHP.
Visit the project as needed to audit the effectiveness of the SSHP.
Remain available for project emergencies.
Develop modifications to the SSHP as needed.
Evaluate occupational exposure monitoring/air sampling data and adjust SSHP requirements as necessary.
Server as a QC staff member.
Approve the SSHP by signature.

3.1.3 UXO Safety and Health Officer

3.1.3.1 The UXO Safety Officer (UXOSO) will be a UXO qualified person, meeting the personnel qualification requirements for a UXOSO and shall review the APP and SSHP, and have had the 30 hour OSHA Construction Safety Course within the last 3 years. The UXOSO is the primary POC for on-site safety issues. The UXOSO reports directly to the Project Manager.

3.1.3.2 The UXOSO will coordinate closely with the SUXOS regarding all safety matters on the work site. He will be authorized to stop work at any time for safety and health reasons and will notify immediately the SUXOS and the USACE OE Safety Specialist of the stop work and explain the cause of the stoppage.

3.1.3.3 The UXOSO will be responsible for implementing and enforcing the requirements of this SSHP. Any changes in operations or conditions requiring changes to this SSHP will be coordinated through the Safety and Health Manager and the Project Manager (PM).

3.1.3.4 The UXOSO will provide safety training to on-site employees and subcontractors through mobilization training sessions, daily pre-operations safety briefings, daily debriefings, weekly supervisor safety meetings, visitor training, personal protective equipment (PPE) training, as well as any other training needs that may surface during the course of operations. The UXOSO will enforce the proper levels of PPE in accordance with this SSHP and will coordinate with the Safety and Health Manager prior to making any changes in PPE requirements.

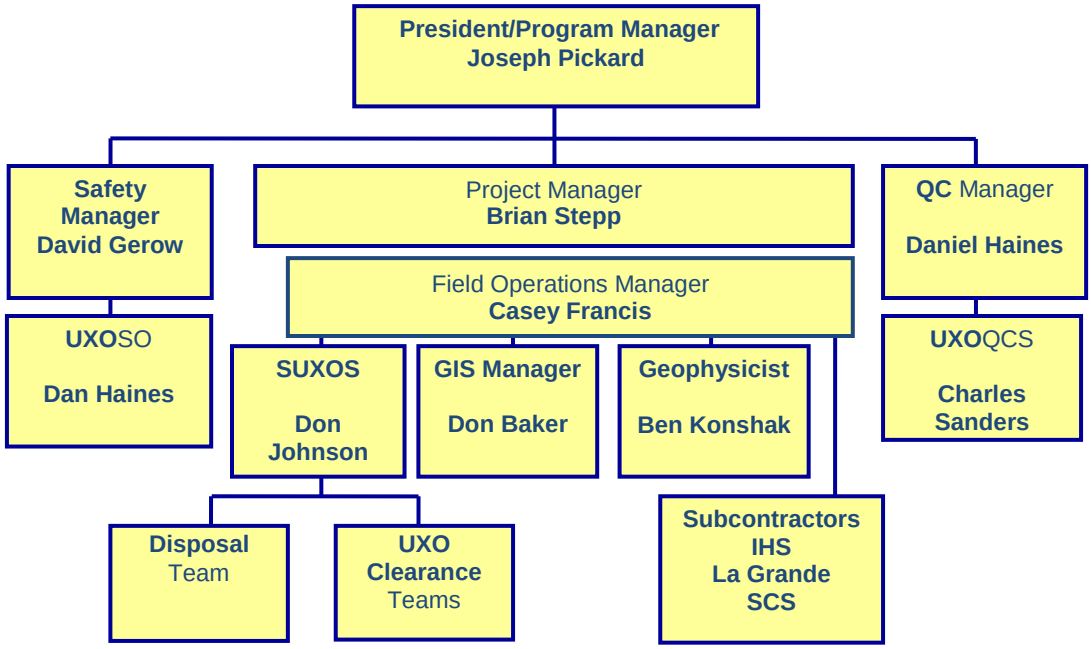
3.1.3.5 The UXOSO will conduct daily safety inspections, weekly safety audits, and maintain all required safety forms (as well as the safety log), and he will follow up on any discrepancies noted until correction has been verified. The UXOSO will investigate all onsite accidents, incidents, and near misses.

3.1.4 On-Site Project Manager

3.1.4.1 The On-Site Project Manager (OPM), Brian D. Stepp, will provide project management and administrative support during field operations and will prepare or approve all United States Army Corps of Engineers (USACE) required reports and documents. Environet will have overall responsibility for the health and safety of site personnel operating under this Scope of Work (PWS).

3.1.4.2 The OPM will be the point of contact (POC) on all project-related issues with USACE. He will ensure that all safety and health requirements are met, by the contractor and on-site subcontractor personnel, through close coordination with the SUXOS.

Figure 3-1: Project Safety Organization



3.1.5 Senior Unexploded Ordnance Supervisor

3.1.4.3 The Senior Unexploded Ordnance Supervisor (SUXOS) is responsible for on-site enforcement of all Project Work Plan (PWP), Accident Prevention Plan (APP), and Site Safety and Health Plan (SSHP) requirements. He will provide direct supervision of on-site personnel and will coordinate activities with subcontract personnel.

3.1.4.4 The SUXOS will coordinate closely with the OPM regarding site activities and will be the on-site POC with the USACE OE Safety Specialist.

3.1.4.5 The SUXOS will work closely with the UXOSO to ensure that all employees on the site are trained adequately and continue to follow safe operating procedures. The SUXOS is the primary POC for the UXOSO regarding resolution of on-site safety issues.

3.1.5 Subcontractor Responsibilities

3.1.5.1 Subcontract personnel working on this site will be required to prepare a site-specific safety and health plan, which is at least as stringent as the SSHP, or they will follow requirements of this SSHP. The SUXOS will be responsible for ensuring all personnel are following the APP and SSHP.

3.1.5.2 All subcontractors will be responsible for providing medically Approved and properly trained site personnel with certifications provided in their SSHP and updated as necessary. Current training certificates (i.e., 40-hourHAZWOPER Course, 8-hourHAZWOPERrefresher, and 8-hour supervisors HAZWOPER training) and medical clearance certification will be maintained on-site with the UXO Safety Officer.

3.1.5.3 The subcontractor will also be responsible for providing equipment, including PPE that is safe for operation.

3.1.6 Responsibilities of All Site Personnel

3.1.6.1 All Contractor, USACE, subcontract personnel, and visitors, who will be involved in on-site activities, are responsible for the following:

- Taking all reasonable precautions to prevent injury to site personnel and being alert to potentially harmful situations.
- Performing only those tasks that can be done safely with proper training provided. All on site personnel have stop-work authority when imminent safety or environmental hazards are found or identified.
- Notifying the UXOSO of any special medical conditions (e.g., allergies, contact lenses, diabetes, etc.) that may be impacted by site operations.

- Notifying the UXOSO of any prescription and/or nonprescription medication that a worker may be taking that might cause drowsiness, anxiety, or other unfavorable side effects.
- Preventing spillage and splash of materials to the greatest extent possible.
- Practicing good housekeeping by keeping the work area neat, clean, and in order.
- Reporting immediately all injuries, no matter how minor, to the UXOSO.
- Complying with the SSHP and all safety and health recommendations and precautions, and using properly the PPE as determined by this SSHP and/or the UXOSO.

3.1.7 Resumes

3.1.7.1 The resumes of all Contractor personnel assigned specific safety and health responsibilities are included in Appendix H of the PWP.

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Section 4 Training

4.1 General Training

Prior to commencement of site activities, the Safety and Health Manager and the UXOSO will ensure that all employees and contractor/subcontract personnel who are actually engaged in MEC operations are informed of all site hazards. This information will be in the nature and degree of exposure to chemical and physical hazards, which are likely to result from participation in site operations. The contractor will accomplish this by ensuring that all personnel entering the site have received the appropriate OSHA and site specific training, as outlined in this section, prior to participation in site activities.

4.1.1 40-Hour Off-Site Hazardous Waste Instruction

4.1.1.1 All employees and subcontractors involved in MEC site activities must have received a minimum of 40 hours of hazardous waste operations and emergency response health and safety instruction off site in accordance with 29 CFR 1910.120(e). In addition, site workers will have received a minimum of three days actual field experience under the direct supervision of a trained, experienced supervisor.

4.1.1.2 Current training of all employees on the site will be verified prior to mobilization.

4.1.2 8-Hour Refresher Training

4.1.2.1 Employees, managers, and supervisors will receive 8 hours of refresher training for the OSHA 40 Hour Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) in accordance with 29 CFR 1910.120(e) annually. Any critique of incidents that have occurred in the past year that can serve as training examples of related work, and other relevant topics will be discussed.

4.1.2.2 Per the MR-005-09, employees, managers, and supervisors have received 3 days of field experience under the direct supervision of a trained, experienced supervisor.

4.2 Supervisory Training

4.2.1 40-Hour Hazardous Waste Operations and Emergency Response, Field Experience, and Specialized Supervisory Training

4.2.1.1 On-site management and supervisors directly responsible for, or who supervise employees engaged in hazardous waste operations will have received 40 hours initial Hazardous Waste Operations and Emergency Response and 3 days of supervised field experience, and at least 8 additional hours of specialized, supervisory training in OSHA standards 29 CFR 1910.120(e)(4) and 29 CFR 1926.65(e)(4) (Safety and Health Regulations for Construction – Hazardous Waste Operations and Emergency Response) at the time of job assignment.

4.2.1.2 This additional training includes a review of the SHSP, management of MEC cleanup operations, management of site work zones, communication with the public and the media, PPE selection and limitations, spill containment, and monitoring site hazards. The safety and health staff, with specific responsibilities for safety and health guidance on-site will receive the training provided to general site workers and their supervisors. They also receive additional training in safety and health issues, policies, and techniques.

4.3 30-Hour Construction Safety Course

4.3.1 OSHA 30-Hour

4.3.1.1 UXO Safety and Health Officer will have satisfactorily completed the OSHA 30-hour Construction Safety Course.

4.4 Project-Specific Training

4.4.1.1 In order to fulfill the site information training requirements of 29 CFR 1910.120(b)(1)(iv) and 29 CFR 1910.120(e)(1), all employees, contractors, subcontractors, and visitors will attend site-specific training sessions. These training sessions will apply to individual jobs and responsibilities, and provide an overview of the site hazards and the means to control those hazards.

4.4.1.2 General site-specific training will be conducted by the Safety and Health Manager and/or the UXO Safety Officer and will include classroom instruction.

4.4.1.3 Training may address the following subject areas, depending upon individual jobs: details of the SSHP; employee rights and responsibilities; safe work practices; Hazard Communications Program; measures and procedures for controlling site hazards; handling emergencies and accidents; rules and regulations for vehicle use; safe use of field equipment; handling, storage, and transportation of hazardous materials; use, care, and limitations of PPE.

4.5 UXO Training

4.5.1 UXO Qualification Requirements

4.5.1.1 All UXO personnel assigned to positions as UXO Technician I, UXO Technician II, UXO Technician III, UXO Safety Officer, UXOQCS, and SUXOS, will meet the qualification requirements detailed in USAESCH-OE-CX, DID MR-025, and Department of Defense Explosive Safety Board (DDESB) Technical Paper (TP) 18. A copy of their certificates of graduation will be kept on file at Corporate Headquarters and on site. UXO qualified personnel will have knowledge and experience in military ordnance, ordnance components, and explosives location, identification, render safe recovery/removal, transportation, and disposal safety precautions. UXO personnel will have the knowledge and experience to effect safe handling and transportation of found ordnance items.

4.5.1.2 Non-UXO qualified personnel working or visiting the MEC sites will receive a site-specific MEC recognition briefing from the UXOSO. This site-specific training will be used to familiarize non-qualified UXO personnel with the appearance of ordnance type items that may be found on site. Non-UXO-qualified personnel will not touch any ordnance-related items unless they have been inspected first by UXO-qualified personnel and determined to be ordnance related scrap or inert ordnance.

4.6 Personal Protective Equipment Training

4.6.1 PPE training is covered under Appendix D of the PWP.

4.7 First Aid/CPR Training

4.7.1 Project Personnel Trained

4.7.1.1 A minimum of two project personnel certified in first aid/ cardiopulmonary resuscitation (CPR) will be on-site to provide immediate response to an accident situation until medical assistance arrives on the site. Daily, during the Pre-operations Safety Briefing, the names of these individuals will be briefed to employees.

4.8 Ongoing Training

4.8.1 Periodic Site Training

4.8.1.1 Ongoing training will be conducted for employees during work activities. This ongoing training will consist of briefings and periodic site training, as necessary, to provide a safe work environment for workers.

4.9 Daily Tailgate Safety Briefing

4.9.1 Safety Briefings

4.9.1.1 Tailgate safety briefings consist of providing short training sessions in various subjects that give the site worker knowledge and confidence in performing duties in a potentially hazardous environment. The tailgate safety briefing will be given prior to commencing work each day by the Team Supervisor at the work location and will include such items as:

- expected weather conditions;
- general site hazards;
- MEC hazards;
- PPE required at each site;
- emergency evacuation procedures;
- heat/cold stress precautions;
- buddy system procedures; and
- review of any safety violations from the previous day.

4.9.1.2 Additional briefings will be provided, as needed, concerning the use of safety equipment, emergency medical procedures, emergency assistance notification

procedures, accident prevention, the PWP, and site orientation to ensure that accomplishment of the project can be carried out in a safe and effective manner.

4.10 Daily Debriefing

4.10.1.1 At the conclusion of each workday, a de-brief, for all employees, will be held, if appropriate, and the day's work will be discussed to determine if changes are warranted before commencing the next day's activities.

4.11 Periodic Site Training

4.11.1.1 On the first day of each work week/period, or more frequently if needed, a pertinent topic will be selected and elaborated upon by the UXOSO during the pre-operations safety briefing. These safety meetings will help ensure the safety and health of site personnel in the performance of regular work activities and in emergency situations. Safety meetings will be documented in the appropriate log, and the Documentation of Training Form (Appendix F of the PWP) will be completed.

4.12 Visitor Training

4.12.1.1 All visitors to the site, even if escorted, must receive, as a minimum, a briefing on site conditions, hazards, and emergency response procedures. Visitors will not be permitted in the restricted work areas unless they have the appropriate level of personal protective equipment. Visitors not complying with the above requirements will not enter the restricted work areas. They may observe site conditions from a safe distance. All visitors will make appropriate entries in the Visitor‘s Log.

4.13 Documentation

4.13.1.1 A training record will be kept in each employee‘s individual file to confirm that adequate training for assigned tasks are provided and that training is current. In addition, “Documentation of Training” forms will be completed and kept on file at the work site.

Section 5 Personnel Protective Equipment

5.1 PPE Selection

5.1.1 PPE Selected by UXO Safety Officer

5.1.1.1 Whenever engineering controls or other protective measures are not feasible or adequate to reduce exposures and safeguard the worker, the UXOSO will select appropriate PPE. PPE will be selected on the basis of hazards known or anticipated at the work site, and the level of PPE will not be reduced until adequate documentation can demonstrate that the hazard level has been reduced enough to warrant such adjustment.

5.1.1.2 Each task outlined in the PWS will be assessed in the Activity Hazard Analysis prior to its initiation to determine the risk of personnel exposure to safety and health hazards, which may be encountered during its conduct. The hazard analysis will be based on available information pertaining to the historical use of the site, site contaminant characterization data, and the anticipated operational hazards. This information will be provided by the client or collected by site personnel. The PPE assigned as a result of the hazard assessment represents the minimum PPE to be used during initial site activities.

5.1.1.3 Since hazard analysis/risk assessment is a continuing process, changes in the initial types and levels of PPE will be made in accordance with information obtained from the actual implementation of site operations and data derived from the site monitoring. As a general rule, the levels of PPE will need to be reassessed if any of the following occur:

- commencement of a new work phase, such as the start of work on a different portion of the site, or different types of work due to a change in the PWS;
- change in job tasks during a work phase;
- change of season/weather;
- when temperature extremes or individual medical considerations limit the safe use of PPE;
- unanticipated contaminants are encountered;
- change in expected levels of contaminants; and
- change in work scope, which affects the degree of contact with contaminants.

5.1.1.4 If work tasks are added, or amended, after completion and approval of the SSHP, the UXO Safety Officer will conduct the Activity Hazardous Analysis and consult with the Safety and Health Manager. The level and type of PPE to be used will be identified and the UXOSO will complete the Activity Hazard Analysis Form.

Safety and Health Manager will approve any changes in PPE, which involve downgrading the level of PPE.

5.1.2 Selection Criteria for PPE

5.1.2.1 The Safety and Health Manager performs PPE selection after consultation with the UXO Safety Officer. During the selection of PPE, the Safety and Health Manager and UXO Safety Officer will utilize general uxo information, the manufacturer's recommendation and specifications, and the anticipated physical hazards to select the level and types of PPE to be used for each task. Once the specific types of PPE have been selected for each task, the UXOSO and Safety and Health Manager will ensure that the items will properly fit each employee designated to wear PPE. The following factors also will be considered:

- limitations of the equipment;
- work mission duration;
- temperature extremes;
- material flexibility;
- durability/integrity of the equipment; and
- selection of respiratory protection, if required at a later time, will be conducted in accordance with the Respiratory Protection Program.

5.1.3 Modified Level D PPE

5.1.3.1 Due to the type of work that will be taking place during the Waikoloa Maneuver Area, Modified Level D is recommended. Almost all tasks require Modified Level D PPE with the exception of conditions that include the use of and engagement in such activities including welding, white phosphorus, handling MHE, etc. This level of PPE will not be allowed in areas of the site where atmospheric hazards are known or expected to exist. Modified Level D should also be worn only if the activity in which personnel are engaged does not have the potential for splash, immersion or any other contact with hazardous substances. Level D involves the use of the following PPE:

- work clothes, specifically long pants and short sleeve shirt permitted,
- leather work gloves;
- leather work boots;
- foot protection (when working around heavy equipment, clearing and grubbing equipment);
- hardhat (when working around heavy equipment, clearing and grubbing equipment, or overhead hazards);
- safety glasses;

- safety goggles (when working in high winds, dusty environments, or when directed to by UXO Supervisors or the UXOSO);
- hearing protection (when working in a noise hazard area);
- leg chaps (when working with clearing and grubbing operations); and
- face shield (when working with clearing and grubbing operations).

5.1.4 Inclement Weather PPE

5.1.4.1 Severe weather and cold weather conditions are not anticipated during activities to be conducted under the PWS. The UXOSO will ensure that employees take appropriate precautions to protect themselves from inclement weather.

5.1.5 PPE Use and Limitations

5.1.5.1 Whenever feasible, engineering controls and work practices, or a combination thereof, will be utilized to maintain personal exposures to hazardous substances below established exposure limits and to protect site workers from other safety and health hazards. The exposure limits used by the project will be the Threshold Limit Values (TLV) recommended by the American Conference of Governmental Industrial Hygienists (ACGIH). Other recognized published exposure levels, such as those found on Material Safety Data Sheets (MSDSs), will be used if OSHA does not regulate the substance. The contractor will not utilize a system of employee rotation as a means of complying with the permissible exposure limit (PEL), TLV, or other published limits. Compliance will be maintained through engineering controls, wherever possible, and if the hazard cannot be engineered out of the work area, PPE and safe work practices will be used to prevent exposures in excess of the PELs.

5.1.6 Work Mission Duration

5.1.6.1 UXO personnel involved in performing MEC field operations may work up to a 50 hour work week based on the requirement that no more than 40 of those hours are directly involved in MEC field operations. Time mobilizing to and from the work location is not considered MEC field operations. The standard work week, for activities, on the project will be four 10 hour days. Changing work requirements and conditions may require the use of five, 10 hour days as needed. Two consecutive work weeks shall be separated by 48 hours of rest. Once PPE is selected, the safe duration of work/rest periods will be determined based on the:

- anticipated work rate;
- ambient temperature and other environmental factors;
- type of protective ensemble; and
- individual worker characteristics and fitness.

5.1.7 PPE Maintenance and Storage

5.1.7.1 The UXOSO will be responsible for ensuring that PPE is in good, clean, working order prior to issuing the PPE the first time. Once issued, site personnel will be responsible for the inspection and maintenance of re usable articles of PPE. Site personnel will ensure that re-usable articles of PPE are maintained in a clean and sanitary fashion.

5.1.7.2 Maintenance of PPE can vary greatly, based upon the complexity of the PPE and the intricacy of the repair involved. The UXOSO will become familiar with the manufacturer's recommended maintenance and, when possible, repair defective PPE. If unable or unauthorized to conduct the repair, the UXOSO will return the item to the manufacturer for repair, or procure a replacement.

5.1.7.3 PPE will be stored in a location that is protected from the harmful effects of sunlight, damaging chemicals, moisture, extreme temperatures, impact or crushing. The PPE for this site will be stored in the field office.

5.2 PPE Procedures

5.2.1 The contractor does not anticipate activities to be conducted in areas containing hazardous, toxic and radiological waste (HTRW) contamination. The decontamination and disposal of PPE will not be required during activities under this project. Specific procedures include:

- All contractor, or subcontract site personnel will be given initial, PPE specific training, which complies with this section. The UXOSO or the Safety and Health Manager, prior to personnel participating in site operations where PPE is required, will give this training.
- All personnel receiving PPE training will be required to demonstrate an understanding of the training topics and the ability to correctly use the PPE. This will be accomplished through the UXOSO supervising and visually inspecting each individual's ability to properly don and use the PPE during initial use of the PPE.
- Upon completion of the training and after each employee has successfully demonstrated the requisite understanding, the UXOSO will complete the Documentation of Training Form. This form identifies the employees who attended the training course and successfully demonstrated the required knowledge, the date(s) of the training and demonstration session(s), and the PPE covered by the training session.

5.2.2 PPE Donning and Doffing Procedure

5.2.2.1 PPE donning procedures are outlined below:

- The general donning procedures are given as a guide and may be altered by the UXOSO if the improvements are warranted by site operations and approved by the Safety Manager.
- Prior to donning, gather the PPE required for performing the task specified for the day‘s operations.
- Always inspect protective gloves, boots/boot covers, hard hats, etc. If something is wrong with the PPE, which may affect its use, turn it in for other PPE that is in good condition.
- Don all other PPE (hard hat, safety glasses, etc.), saving the gloves for last.

5.2.2.2 PPE doffing procedures are presented below:

- The procedures to follow in removing PPE are common sense procedures, and care should be taken to ensure that no damage to reusable PPE is made. Most PPE utilized on this site is of the reusable type. Disposable PPE is considered that which cannot be cleaned, or which may be subjected to contamination from hazardous materials. It is not anticipated that contamination from hazardous materials will be encountered during activities on this project.
- Sufficient quantities of PPE will be maintained, on-site, for replacement of any defective or deteriorated PPE.
- If hearing protection is required, and a disposable type is used, it will be replaced and disposed of daily.

5.3 PPE Inspection Procedures

5.3.1 Inspections

5.3.1.1 The UXOSO, or a designated appointee, will inspect all incoming shipments of PPE received from the contractor’s office, the manufacturer, or the distributor. This inspection will include checking the shipment for correctness of size, quantity, material, and quality. Any deficiencies should be noted and defective material returned to the supplier. Prior to donning PPE, site personnel will thoroughly inspect each piece of PPE to determine if it is in proper working order, and ensure that the item will be capable of protecting the employee from site hazards. Site personnel will check the following when pre-donning inspections are conducted:

- Check that hard hats are in good condition, with no cracks or chemical/material build-up visible.
- Check hard-hat headband for proper function and completeness.

- Ensure all eye/face/head PPE fits comfortably and securely.
- Check safety glasses and face shields for cracks or scratches that could impair vision or compromise structural integrity.
- Check safety glasses for side shields.

5.4 Evaluation of PPE Program

5.4.1 Review and Evaluation

5.4.1.1 Since hazard/risk assessment is a continuing process, changes in the initial types and levels of PPE will be made in accordance with information obtained from the actual implementation of site operations and data derived from the site monitoring. The UXOSO will review periodically the on-site PPE program to ensure that the proper level of PPE is being utilized. If changes to operations on-site are encountered, the UXOSO will make a request for appropriate changes to the required level of PPE for activities on this site.

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Section 6 Medical Surveillance and Project Monitoring

6.1 Project Medical Surveillance

6.1.1 Project Medical Surveillance Program Ongoing

6.1.1.1 Medical surveillance of UXO technicians and subcontract employees will be conducted in accordance with the requirements of OSHA 29 CFR 1910.120(f) and 29 CFR 1910.95 (f), and the Project Safety Program. All employees working at the Waikoloa Maneuver Area are on the Project Medical Surveillance Program. A baseline health assessment is conducted prior to participating in site operations (e.g., heavy metals concentration, respiratory, vision, etc), and it is updated annually thereafter, which determines the worker's ability to perform MEC operations in a safe and healthful manner. Prior to assigning any employee to work at the Waikoloa Maneuver Area, that employee's records will be checked to ensure that the medical surveillance physical is current and will remain in effect for the duration of the assignment. Current and updated medical clearance certification will be maintained on-site with the UXO Safety Officer.

6.1.1.2 Radiological contamination is not expected to be present in the Waikoloa Maneuver Area where work will be performed. Therefore radiological monitoring is not planned for this project.

6.2 Environmental Exposure/Air Sampling Program and Personnel Monitoring

6.2.1.1 On-site monitoring will be conducted during specific site activities to evaluate the potential physical hazards that may be encountered. These on-site monitoring activities will be used to assist in determining the effectiveness of control measures, the need for upgrading or downgrading of PPE requirements, and the effectiveness of safe work practices. The UXO Safety Officer or his designate will use direct-reading, real-time instruments whenever possible, or required, to detect and qualify site hazards. If a reading is achieved, which exceeds the action level specified in Table 6-1, the UXOSO will take the steps outlined in this section or other referenced paragraphs to correct the situation or minimize the exposure. In accordance with the PWS, MEC hazards exist as a result of DoD activities. MEC is classified as a safety hazard; thus, the applicable provisions of 29 CFR 1910.120 will apply.

6.2.2 Perimeter Monitoring Requirements

6.2.2.1 There will be no perimeter monitoring conducted during activities under the PWS since site operations which would result in the release of toxic materials in a gaseous, vapor, or particulate form will not be conducted. Should operations affect

off-site personnel or locations, then perimeter monitoring will follow procedures in Appendix L of the PWP, the Minimum Separation Area Notification and Implementation Plan.

6.2.3 Personal Monitoring Requirements

6.2.3.1 No personnel monitoring equipment is required during the duration of this project because it is not anticipated that any personnel will come in contact with any hazardous material that would warrant such equipment (e.g., radiological, biological or chemical).

6.2.4 Real-time Direct-Reading Monitoring

6.2.4.1 The guidelines presented in Table 6-1 represents the initial, real-time, direct-reading monitoring options that may be utilized, as required, for this site. The results of previous monitoring or the detection of factors that indicate a potential for exposure may require an increase or reduction of monitoring frequency. The monitoring equipment to be used to assess exposure hazards for this project site may include:

Sound level meter: Type II, A scale – used as a screening device to measure sound power emitted by a source.

Noise dosimeter: Will be used to calculate the 8-hour time-weighted average (TWA) exposure, when necessary.

Primary Heat Monitor: SkyScan TI, Heat Index Monitor. The monitor is a small, portable handheld device capable of giving readings in work areas where other monitoring equipment might not work as well. The multi-function heat-index warning system provides an audible warning before the heat index reaches critical levels and shows all ranges of dangerous heat conditions. Displays actual temperature in Fahrenheit and Celsius as well as relative humidity and heat index to give you a complete assessment of the current weather conditions. This technology is much easier to deploy and maintain than other models of heat index monitoring.

Secondary Heat Monitor: Wet-bulb, Globe Temperature (WBGT) meter. The WBGT provides a useful, first-order index of the environmental contribution to heat stress as influenced by air temperature, humidity, and radiant heat. Used as a screening tool to initially assess the potential for personnel to experience heat strain.

Table 6-1: Site Monitoring Schedule and Action Levels

Hazard	Equipment	Monitoring Frequency/Location	Action Level	Action to be taken
Heat Stress	SkyScan TI Heat Index Monitor or Wet-bulb, Globe Temperature (WBGT) Meter	Daily when ambient temperatures are expected to exceed 78.8°F for acclimated workers, 72.5°F for non-acclimatized workers, and 70.0°F for workers using impermeable or semi-impermeable clothing	Above ACGIH screening criteria presented in Table 6-2	Institute physiological monitoring and appropriate controls as outlined in Section 6.3.4.10.
Cold Stress	Meteorological Data and Table 6-3	Not anticipated. applicable only when ambient temperatures are expected to drop below 32°F.	Above ACGIH screening criteria presented in Table 6-6	Institute physiological monitoring and appropriate controls as outlined in Section 6.3.5.1.
Noise	Sound Level Meter	Conducted during initial operation of high noise equipment, and periodically thereafter, according to the recommendations of the Safety Officer.	Whenever noise levels in the hearing zone exceed 85 dB.	Conduct noise dosimetry as outlined below. Issue hearing protection devices to effected personnel
	Noise Dosimeter	Whenever noise levels in the hearing zone exceed 85 A Weighted Sound Level (dBA).	Noise readings greater than 80 dBA 8-hour time-weighted average	Report dosimeter readings to the UXO Safety Officer to ensure hearing protection is adequate for the level of noise experienced.

6.2.5 Integrated Breathing Zone Sampling

6.2.5.1 Exposure monitoring will focus on the potential for exposure to physical hazards (including MEC) during surface clearance activities. It is not anticipated that personnel will come into contact with any hazardous materials.

6.3 Heat/Cold Stress Monitoring

6.3.1.1 The UXOSO will review conditions with site personnel that would modify an individual's susceptibility to heat/cold-induced stress; however, cold stress is not anticipated for this project. UXOSO will ensure that such individuals have the opportunity to modify or refrain from activities that would put personnel at risk.

6.3.1.2 Prior to initiating site activities each day, and periodically throughout the day, the UXOSO will inspect the site personnel for evidence of heat related illnesses. Evidence of extreme dehydration, illness, drug or alcohol use may require the UXOSO to restrict the worker's activities until such time as the worker is fit for duty. Personnel identified as being at high risk for heat stress, who are allowed to participate in site operations, will be monitored frequently by the UXOSO.

6.3.2 Heat and Cold Stress Monitoring Protocols

6.3.2.1 SkyScan TI-Plus Heat Index Monitor Protocol

6.3.2.2 For site conditions where personnel are working in Level D PPE, and the ambient temperature is greater than 75°F, the UXOSO will conduct portable hand held heat index monitoring to assist in controlling the potential for site workers experiencing heat related adverse health effects. The UXOSO will use a SkyScan TI Plus Heat Index Monitor or suitable substitute, throughout the day to determine the heat index readings and to determine the work/rest schedule to be implemented.

6.3.2.3 Wet-Bulb, Dry Globe Thermometer (WBGT) Monitoring Protocol

6.3.2.4 For site conditions where personnel are working in Level D PPE, and the ambient temperature is greater than 75°F, the UXOSO may conduct WBGT monitoring to assist in controlling the potential for site workers experiencing heat related adverse health effects. The UXOSO will use a QUESTemp 34™, Portable Thermal Environment and Heat Stress Monitor or suitable substitute, if WBGT monitoring is conducted, periodically throughout the day to determine the WBGT readings and to determine the work/rest schedule to be implemented. The values outlined in Table 6-2 are recommendations and are designed such that nearly all acclimatized, fully clothed workers with adequate water and electrolyte replacement liquids intake will be able to function without their body temperatures exceeding 100.4°F.

Table 6-2: Permissible WBGT Heat Exposure Threshold Limit Values

Work-Rest Regiment	Work Load		
	Light[a]	Moderate	Heavy
Continuous work	86°F (30.0°C)	80°F (26.7°C)	77°F (25.0°C)
75 Percent Work – 25 Percent Rest, each hour	87°F (30.6°C)	82°F (28.0°C)	78°F (25.9°C)
50 Percent Work – 50 Percent Rest, each hour	89°F (31.4°C)	85°F (29.4°C)	82°F (27.9°C)
25 Percent Work – 75 Percent Rest, each hour	90°F (32.2°C)	88°F (31.1°C)	86°F (30.0°C)

°C = degrees Celsius. °F = degrees Fahrenheit.
[a]Consult the ACGIH TLV booklet for definitions of Light, Moderate, and Heavy workloads. Values are given in °F and (°C) WBGT, and are intended for workers wearing single layer summer-type clothing. Use of semi- or totally impermeable clothing requires monitoring in accordance with the Heat Stress Prevention Program. As workload increases, the heat stress impact on an unacclimatized worker is exacerbated. For unacclimatized workers performing a moderate level of work, the permissible heat exposure TLV should be reduced by approximately 2.5°C.

6.3.2.5 WORKER MONITORING

6.3.2.5.1 Every worker who works in extraordinary conditions that increase the risk of heat stress should be personally monitored. These conditions include wearing semipermeable or impermeable clothing when the temperature exceeds 21°C (69.8°F), working at extreme metabolic loads (greater than 500 kcal/hour), etc. Only permeable light clothing is expected on this site.

6.3.2.5.2 Personal monitoring can be done by checking the heart rate, recovery heart rate, oral temperature, or extent of body water loss.

6.3.2.5.3 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.

6.3.2.5.4 The recovery heart rate can be checked by comparing the pulse rate taken at 30 seconds (P_1) with the pulse rate taken at 2.5 minutes (P_3) after the rest break starts. The two pulse rates can be interpreted using the table below.

HEART RATE RECOVERY CRITERIA

Heart rate recovery pattern	P_3	Difference between P_1 and P_3
Satisfactory recovery	<90	--
High recovery (Conditions may require further study)	90	10
No recovery (May indicate too much stress)	90	<1

6.3.2.6 Cold Stress Monitoring Protocol

6.3.2.7 Due to the climate of the Island of Hawaii, cold stress is not anticipated for this project. Cold temperature extremes can be made more dangerous by water and wind speed. A wind chill chart, Table 6-3, should be used to monitor the cooling power of wind on exposed flesh. At temperatures below 32°F, the effects of wind speed become pronounced. The use of a tarp or other barrier should be considered as a contingency to reduce the effects of wind speed. The UXOSO will also use meteorological data and Table 6-3 to inform site personnel of the combined temperature/wind chill effect to be expected during the day's activities.

6.3.2.8 To date, there are no federally mandated regulations related to work/rest schedules. The "15-minute break every 2 hours" is a recommended routine but may not be adequate for all cold environments. The ACGIH has published a work/rest schedule, which is provided in Table 6-6.

6.3.2.9 However, this table only applies to, and should be implemented for, temperatures below 0°F. Therefore, for temperatures above 0°F, workers will be encouraged to seek shelter and rest in a warm area whenever they exhibit signs or symptoms of cold stress, as discussed previously.

Table 6-3: Cooling Power of Wind on Exposed Flesh (Expressed as Equivalent Temperature)

Equivalent Temperature (°F)																		
	Calm	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
W			COLD															
i	5	32	27	22	16	11	6	0	-5	-1-	-15	-21	26	-31	-36	-42	-47	-52
n					VERY COLD													
d	10	22	16	10	3	-3	-9	-15	-22	-27	-34	-40	-46	-52	-58	-64	-71	-77
						BITTER COLD												
S	15	16	9	2	-5	-11	-18	-25	-31	-38	-45	-51	-58	-65	-72	-78	-85	-92
p	20	12	4	-3	-10	-17	-24	-31	-39	-46	-53	-60	-67	-74	-81	-88	-95	-103
e										EXTREME COLD								
e	25	8	1	-7	-15	-22	-29	-36	-44	-51	-59	-66	-74	-81	-88	-96	-103	-110
d	30	6	-2	-10	-18	-25	-33	-41	-49	-56	-64	-71	-79	-86	-93	-101	-109	-116
	35	4	-4	-12	-20	-27	-35	-43	-52	-58	-67	-74	-82	-89	-97	-105	-113	-120
M	40	3	-5	-13	-21	-29	-37	-45	-53	-60	-69	-76	-84	-92	-100	-107	-115	-123
P	45	2	-6	-14	-22	-30	-38	-46	-54	-62	-70	-78	-85	-93	-102	-109	-117	-125
H	WIND CHILL CHART																	

6.3.3 Heat and Cold Stress Prevention Protocols

6.3.3.1 Proper training and preventive measures will help avert serious illness and loss of work productivity. Preventing heat stress is particularly important because once someone suffers from heat exhaustion, that person may become predisposed to additional heat injuries. In order to avoid heat related illnesses, proper preventive measures will be implemented whenever environmental conditions dictate. These preventive measures represent the minimal steps to be taken.

6.3.4 Heat Stress Preventive Measures

6.3.4.1 The UXOSO will observe site workers prior to the start of daily operations to determine the individuals susceptible to heat induced stress. Workers exhibiting factors, which make them susceptible to heat stress, will be closely monitored by the UXOSO.

6.3.4.2 Site workers will be trained to recognize and treat heat-related illnesses. This training will include the signs, symptoms, and treatment of heat stress disorders.

6.3.4.3 In order to maintain workers' body fluids at normal levels, workers will be encouraged to drink, as a minimum, approximately 16 ounces of liquids prior to start of work in the morning, after lunch, and prior to leaving the site at the conclusion of the day's activities. Water will be provided. Electrolyte replacement drinks are encouraged. Liquids containing caffeine are to be avoided.

6.3.4.4 When ambient conditions and site workload requirements dictate, as determined by the UXOSO, workers will be encouraged to drink a minimum of 16 to 32 ounces of liquids during each rest cycle. The normal thirst mechanism is not sensitive enough to ensure that enough water will be consumed to replace lost sweat. When heavy sweating occurs, workers will be encouraged to drink even though they may not be thirsty.

6.3.4.5 A shelter or shaded area will be utilized, when possible, where workers may be protected from direct sunlight during rest periods.

6.3.4.6 Monitoring of ambient or physiological heat stress indices will be conducted to allow prevention and/or early detection of heat induced stress.

6.3.4.7 Site workers will be given time to acclimatize to site work conditions, temperature, protective equipment, and workload. Acclimatization is the adaptive process that results in a decrease of the physiological response produced by the application of a constant environmental stress.

6.3.4.8 On initial exposure to a hot environment, there is an impaired ability to work and evidence of physiological strain. If the exposure is repeated on several successive days, there is a gradual return of the ability to work and a decrease in physiological strain.

6.3.4.9 Acclimatization usually takes two to six days of continued work in hot environments, and allows the worker's body to become adjusted to this level and type of work. This process involves a gradual increase in the workload over the required period, the length of which depends upon the nature of the work performed, the ambient temperatures, and the individual's susceptibility to heat stress. The results of acclimatization include: subjective discomfort practically disappears; body temperature and heart rate are lower; there is a more stable blood pressure; and the sweat is more profuse and dilute.

6.3.4.10 Work schedules will be adjusted, when possible, as follows:

- Modify work/rest schedules according to monitoring requirements outlined in Table 6-2.
- Mandate work slowdowns as needed.
- Rotate personnel: Alternate job functions to minimize overstress or overexertion at one task.
- Add additional personnel to work teams.
- Perform work during cooler hours of the day if possible.
- Workers will be encouraged to achieve and maintain an optimum level of physical fitness. Increased physical fitness will allow workers to better tolerate and respond to hot environments and heavy workloads. In comparison to an unfit person, a fit person will have less physiological strain, a lower heart rate and body temperature, and a more efficient sweating mechanism.

  Alcohol should not be consumed in a hot environment because the loss of body fluids increases the risk of heat stress.

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Table 6-4: Heat and Cold Disorders, Symptoms, and Treatment

Disorder	Symptoms	Treatment
Heat Stress		
Heat Rash. Caused by continuous exposure to heat and humid air and is aggravated by wet, chafing clothing. This condition can decrease a worker's ability to tolerate hot environments.	Mild red rash, especially in areas of the body that sweat heavily.	Decrease amounts of time in protective gear and provide powder, such as cornstarch or baby powder, to help absorb moisture and decrease chafing. Maintain good personal hygiene standards and change into dry clothes if needed.
Heat Cramps. Caused by a profuse rate of perspiration that is not balanced by adequate fluid and electrolyte intake. The occurrence of heat-related cramps is often an indication that excessive water and electrolyte loss has occurred, which can further develop into heat exhaustion or heat stroke.	Acute, painful spasms of voluntary muscles such as the back, abdomen, and extremities.	Remove victim to a cool area and loosen restrictive clothing. Lightly stretch and gently massage affected muscles to increase blood flow to the area. Have patient drink one to two cups of liquids immediately, and every 20 minutes thereafter. Consult with physician if condition does not improve. If available, an electrolyte replacement solution should be taken along with liquids.
Heat Exhaustion. Heat exhaustion is a state of weakness or exhaustion caused by stress on various organs to meet increased demands to cool the body. This condition leads to inadequate blood supply and cardiac insufficiency. Heat exhaustion is less dangerous than heat stroke, but nonetheless must be treated. If allowed to go untreated, heat exhaustion can quickly develop into heat stroke.	Pale or flushed, clammy, moist skin, profuse perspiration, and extreme weakness. Body temperature is basically normal or slightly elevated, the pulse is weak and rapid, and breathing is willow. The individual may have a headache, be dizzy, or nauseated.	Remove the individual to a cool, air-conditioned place, loosen clothing, elevate feet, and allow individual to rest. Consult physician, especially in severe cases. Have patient drink one to two cups of liquids immediately, and every 20 minutes thereafter. Total liquid consumption should be about one to two gallons per day. If the signs and symptoms if heat exhaustion do not subside, or become more severe, immediate medical attention will be required.
Heat Stroke. An acute and dangerous reaction to heat stress caused by failure of the heat-regulating mechanisms of the body. The failure of the individual's temperature control system causes the perspiration system to stop working correctly. When this occurs, the body core temperature rises very rapidly to a point (105+ºF) where brain damage and death will result if the person is not cooled quickly.	The victim's skin is hot, and may or may not be red and dry, due to the fact that the individual may still be wet from having sweated while wearing protective clothing earlier. Other symptoms include nausea, dizziness, confusion, extremely high body temperature, rapid respiratory and pulse rate, delirium, convulsions, unconsciousness, or coma.	Cool the victim immediately. If the body temperature is not brought down quickly, permanent brain damage or death may result. The victim should be moved to a shady area; he/she should lie down and the head be elevated. Cool the victim by either sponging or immersing the victim in very cool water to reduce the core temperature to a safe level (<102ºF). If conscious, give the victim cool liquids to drink. Observe the victim and obtain immediate medical help. Do not give the victim caffeinated or alcoholic beverages. Medical help should be summoned
Cold Stress		
Immersion Foot or Trench Foot. Immersion foot usually results from prolonged exposure when air temperatures are above freezing, whereas trench foot normally occurs from shorter exposure at temperatures near freezing.	The symptoms for each disorder are similar and include tingling, itching, swelling, pain in some cases or numbness in others, lack of sweating, and blisters.	Bring the deep body core temperature back to its normal temperature of about 98.6ºF slowly. Workers exhibiting symptoms should be brought to a warm area and allowed to rest and warm up. If a worker's clothing becomes wet, which reduces its insulation effect, it should be removed and replaced by dry clothing, or allowed to dry before resuming work. A warm, non-alcoholic, de-caffeinated drink (not coffee), or soup, may be given.

Disorder	Symptoms	Treatment
Hypothermia. Hypothermia results when the body loses heat faster than it can produce it. When this occurs, the blood vessels in the skin and extremities constrict, reducing the flow of warm blood to those areas, thereby reducing the rate of heat loss. This reduction in blood flow usually affects the peripheral extremities first.	Ears, fingers, and toes begin to experience chilling, pain, and then numbness due to loss of both blood flow and heat. Shivering begins as the body's core temperature begins to drop. The pain and numbness in the extremities is an indication that heat loss is increasing.	See above.
Frostbite. Frostbite occurs when there is actual freezing of the water contained in the body tissues. This usually occurs when temperatures are below freezing, but excessive wind can result in frostbite even at ambient temperatures that are above freezing.	Frostbite tissue damage can be superficial, near the surface of the skin, or extend to deeper body tissues, which can cause severe tissue damage. The skin may first have a prickly or tingling sensation and later become numb with cold, and the appearance may range from superficial redness of the skin to white, hard, frozen-looking tissues.	See above.
Frost Nip. Frost nip or incipient frostbite is the condition characterized by sudden blanching or whitening of the skin.	The skin has a waxy or white appearance and is firm to the touch, but the tissue beneath is resilient.	The victim should be sheltered from the wind and cold and given warm drinks. If the frostbite is superficial, the frozen part should be covered with extra clothing or blankets or warmed against the body. Do not use direct heat, and do not pour hot water over or rub the affected area. Warming should be gentle and gradual. If the frostbite is deep, i.e., the affected area is frozen and hard to the touch, immediate medical attention should be obtained. The safe thawing of deep frostbite is beyond the on-site expertise.

Table 6-5: Suggested Frequency of Physiological Monitoring (For Fit and Acclimatized Workers)

Adjusted Temperature[a]	Normal Work Ensemble[b]	Impermeable Ensemble
90°F (32.2°C) or above	After each 45 minutes of work	After each 15 minutes of work
87.5°-90°F (30.8°-32.2°C)	After each 60 minutes of work	After each 30 minutes of work
82.5°-87.5°F (28.1°-28.1°C)	After each 90 minutes of work	After each 60 minutes of work
77.5°-82.5°F (25.3°-28.1°C)	After each 120 minutes of work	After each 90 minutes of work
72.5°-77.5°F (22.5°-25.3°C)	After each 150 minutes of work	After each 120 minutes of work

°C = degrees Celsius.
°F = degrees Fahrenheit.
Note: For work levels of 250 kilo calories/hour.
[a]Calculate the adjusted air temperature (ta adj) by using this equation: ta adj °F = ta °F + (13 × % sunshine). Measure air temperature (ta) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat. Estimate percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow. (100 Percent sunshine = no cloud cover and a sharp, distinct shadow; 0 percent sunshine = no shadows.)
[b]A normal work ensemble consists of cotton coveralls or other cotton clothing with long sleeves and pants.

6.3.5 Cold Stress Preventive Measures

6.3.5.1 During work in the winter months, the UXOSO will use the tailgate safety briefing to inform site personnel of the measures to be utilized in the prevention and control of cold stress. The UXOSO will also use meteorological data and current site conditions to inform site personnel of the expected weather effect to be expected during the day's activities. Prevention methods, which site personnel, shall utilize the following:

- Use the "*Buddy System*" to keep aware of each team-members physical condition.
- Eat well-balanced meals and maintain adequate intake of non alcoholic, decaffeinated fluids.
- Wear adequate, appropriately layered clothing, including a water repellent outer layer, if precipitation is forecasted.
- Wear a hat and gloves to help retain body heat (when working with static sensitive materials, 100% cotton material is recommended).
- Remove outer layers of clothing during breaks in a sheltered location to prevent excessive sweating.
- In windy, cold conditions, cover all exposed skin.
- Protect clothing from getting wet. This includes keeping clothing from getting wet with sweat, so remove outer layers if work activities cause excessive sweating.
- Seek shelter in a warm, protected area when signs and symptoms of cold stress become evident.

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6.3.5.2 To date, there are no federally mandated regulations related to work/rest schedules. The "15 minute break every 2 hours" is a recommended routine but may not be adequate for all cold environments. For temperatures above 0ºF, workers will be encouraged to seek shelter and rest in a warm area whenever they exhibit signs or symptoms of cold stress, as discussed previously. Refer to table 6-6 below for temperatures below 0 degrees F. Temperatures below 48 degrees are not expected on the project work site due to a tropical and sub-tropical climate.

Table 6-6: TLV Work/Rest Schedule (For 4-Hour Work Shift*)

TLVs Work/Warm-up Schedule for Outside Workers based on a Four-Hour Shift*

Air Temperature - Sunny Sky		No Noticeable Wind		Wind 8 km/h (5 mph)		Wind 16 km/h (10 mph)		Wind 24 km/h (15 mph)		Wind 32 km/h (20 mph)	
°C (approx)	°F (approx)	Max. work Period	No. of Breaks**	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks
-26° to -28°	-15° to -19°	(Norm breaks) 1		(Norm breaks) 1		75 min.	2	55 min.	3	40 min.	4
-29° to -31°	-20°to -24°	(Norm breaks) 1		75 min.	2	55 min.	3	40 min.	4	30 min.	5
-32° to -34°	-25°to -29°	75 min.	2	55 min.	3	40 min.	4	30 min.	5	Non-emergency work should cease	
-35° to -37°	-30° to -34°	55 min.	3	40 min.	4	30 min.	5	Non-emergency work should cease			
-38° to -39°	-35° to -39°	40 min.	4	30 min.	5	Non-emergency work should cease					
-40° to -42°	-40°to -44°	30 min.	5	Non-emergency work should cease							
-43° & below	-45° & below	Non-emergency work should cease									

*2008 TLVs and BEIs - Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. Cincinnati: American Conference of Governmental Industrial Hygienists (ACGIH), 2008 - page 213

6.3.6 Heat and Cold Stress Documentation

6.3.6.1 The UXOSO will be responsible for recording all heat/cold stress related information. This will include training sessions and monitoring data. Training sessions will be documented on the Documentation of Training Form, heat index data and other information will be recorded in the Safety Log.

6.3.7 Physiological Monitoring Protocols

6.3.7.1 Temperature extremes can affect on-site personnel and the use of PPE. Table 6-4 identifies the heat and cold stress disorders, symptoms, and treatment.

6.3.7.2 Heat stress is one of the most common (and potentially serious) illnesses that affect MEC site workers. When site personnel are engaged in operations involving hot environments, a number of physiological responses can occur which may seriously affect the health and safety of the workers. The amount and type of PPE worn may result in reduced work tolerance and the increased risk of excessive heat stress. PPE adds weight and bulk, severely reduces the body's access to normal heat exchange mechanisms (evaporation, convection, and radiation), and increases energy expenditure. Therefore, when selecting PPE, each item's benefit should be carefully evaluated in relation to its potential for increasing the risk of heat stress.

6.3.7.3 The effects experienced by site personnel when working in cold environments depend upon many environmental and personal factors, such as ambient air temperature, wind speed, duration of exposure, type of protective clothing and equipment worn, type of work conducted, level of physical effort, and health status of the worker. In cold environments, overexposure can cause significant stress on the body, which can lead to very serious and permanent injury. Cold may affect just the exposed body surfaces and extremities, or may affect the deeper body tissues and the body core.

6.3.7.4 Table 6-5 will be used to determine the frequency of physiological monitoring of on-site personnel. The length of the work cycle will be governed by the frequency of the required physiological monitoring. For workers wearing permeable clothing (i.e., standard, cotton work clothes), follow recommendations for monitoring requirements and suggested work/rest schedules in the current ACGIH TLVs for Heat Stress, Table 6-2. For workers in Tyvek™ suits, work/rest schedules will be adjusted in accordance with physiological monitoring requirements.

6.3.8 Noise Monitoring Procedures

6.3.8.1 High noise levels are anticipated during the operation of earth moving machinery (EMM) and clearing and grubbing equipment. Equipment manufacturer recommendations will be followed for hearing protection devices and in the event no recommendations are available, the noise levels will be monitored to determine which hearing protection devices will be required. Noise dosimetry will be

considered for any operation where sound level readings indicate a potential for exposures above 85 dBs as recorded in the dBA. Hearing protection should be worn at any time the decibel level exceeds 85 dBA. Table 6-1will be consulted to determine the type, amount, and frequency of noise monitoring.

6.3.9 Monitoring Equipment Calibration and Maintenance

6.3.9.1 All sampling and monitoring instrumentation used in site will be calibrated and/or response-checked in accordance with the manufacturer's specifications before 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 specification.

6.3.10 Blood-Borne Pathogen (BBP) Monitoring

6.3.10.1 All project personnel will receive training on the minimum requirements and procedures for the prevention of contact with blood-borne pathogens (BBP) or other potentially infectious materials. The BBP training and prevention program will meet and/or exceed all requirements set forth in OSHA standard 29 CFR 1910.1030, USACE, and any local requirements.

6.3.10.2 The strategy of Universal Precautions was developed by the Centers for Disease Control to address concerns regarding transmission of human immunodeficiency virus (HIV). The Universal Precautions concept stresses all sources should be assumed to be infectious for HIV, Hepatitis B virus (HBV), and other BBPs. The philosophy of Universal Precautions will be applied whenever workers render first aid involving potential contact with blood or other potential infectious materials.

6.3.10.3 When responding to a medical event, only personnel that are trained and certified in first aid and BBP prevention should be put in a situation in which contact with BBPs may be present. Everywhere a first aid kit is required; a BBP kit will be required as well. In any case, all personnel will receive preventive training and should always avoid exposure to blood or infectious fluids whenever possible.

6.4 Monitoring/Sampling Results

6.4.1 The requirements of this section are not anticipated as a result of the project task hazardous analysis assessment.

6.5 Exposure Monitoring Records

6.5.1 The requirements of this section are not anticipated as a result of the project task hazardous analysis assessment.

6.5.1.1 All exposure monitoring medical records of personnel working on this project will be retained by the company for 30 years and copies of all medical information will be given to the employee upon request.

6.6 Physician's Statement

6.6.1 Physician's Examination Statement

6.6.1.1 The results of the physical examination will be made available to the employee, and a written physician's statement will be sent to UXOSO. The physician's statement will include the following:

- The physician's opinion regarding any conditions, which would place the employee at an increased risk from working in MEC operations.
- The physician's recommended limitations upon the employee's assigned work, if any, and clearance to wear a respirator, if required.
- A statement that the employee has been informed, by the physician, of the results of the examination and any conditions which may require further examination or treatment.
- A copy of the current physician's statement will be kept in the employee's file on-site for the duration of his or her work on the project.

6.7 Supplemental Examination

6.7.1.1 Any site worker who has been injured, received health impairment, developed signs or symptoms of possible over-exposure; or received a documented over exposure without the use of respiratory protection, will undergo a supplemental examination. The contents of this examination will be based upon the type of injury, illness, signs or symptoms, or exposure involved and will be determined by the physician. Prior to reassignment to site activities, the physician will certify that the employee is fit to return to work. If necessary, the physician will specify, in writing, any activity restrictions or additional tests that may be required.

6.8 Termination Examination

6.8.1.1 Upon termination of employment, personnel who have worked continuously at the project site will be afforded an opportunity to undergo a termination examination. An employee who resigns prior to completion of the contract will not be offered a company sponsored termination physical. If the employment duration is at least 6 continuous months the termination examination will be equivalent to the pre-assignment health assessment. The termination examination will be conducted for any period of time less than 6 continuous months as long as the employee is not terminating for the purpose of employment with another firm. The content of this examination may be modified by the physician, based on input from the Safety and Health Manager, related to the nature and type of exposure the worker received.

6.9 Radiation Dosimetry

6.9.1.1 No detailed procedures for the remediation of radiological or CWM is required for this project. Available archival data has no indication that any radiological materials or CWM materials were ever tested or fired on this facility.

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Section 7 Standard Operating Procedures, Engineering Controls, and Work Practices

7.1 Procedures and Guidelines

7.1.1 Safe Work Environment

7.1.1.1 The procedures and guidelines detailed in this Appendix are to be adhered to by all personnel performing project activities at the Waikoloa Maneuver Area. These procedures and guidelines are provided to ensure a safe work environment for all workers on-site.

7.1.2 As Low As Reasonably Achievable (ALARA) Policy

7.1.2.1 The contractor's policy is to maintain exposures to hazardous MEC, and chemical, physical, or biological hazards at levels that are as low as reasonably achievable (ALARA). ALARA is achieved through proper training of employees, adequate work procedures, adequate engineering controls, good personal hygiene practices, and, when required, use of protective equipment. Each individual working in a restricted area is required to adhere to established ALARA rules, regulations, and concepts outlined in this SSHP. ALARA applies to all phases of the operation and should be considered from the planning phase through to the project's completion. ALARA policies will be re-evaluated and updated by the SUXOS, UXOSO and Safety and Health Manager, as required by changes in site conditions.

7.2 General Work Practices

7.2.1 General work practices include the following:

- Safe work practices will be implemented whenever possible to eliminate or reduce the potential for employee exposure.
- Workers will wash their hands immediately or as soon as feasible after removal of gloves or other PPE.
- Workers will wash hands and any other skin with soap and water, or flush mucous membranes with water immediately following contact with blood or potentially infectious materials.
- If potentially contaminated sharps are encountered, the item will immediately be disposed of in an appropriate container or decontaminated.

- Eating, drinking, applying cosmetics or lip balm, handling of contact lenses, or storage/handling of food are prohibited in all areas where potentially infectious materials are present.
- Equipment that has become contaminated will be decontaminated prior to servicing or storage, unless decontamination is not feasible, in which case the equipment will be disposed of properly.

7.3 Site Rules/Prohibitions

7.3.1.1 Safe practices can reduce hazards due to normal site activities. Personnel must keep the prudent guidelines listed below in mind when conducting field activities. General personnel requirements include:

- The prevention of fire is a primary concern for this project; therefore, smoking and open flames of any type are prohibited on-site.
- Horseplay or fighting is prohibited.
- Eating, drinking, applying lotion, chewing gum, tobacco, or any other hands-to-face activities are prohibited on site, except in designated areas after the hands have been washed.
- Wearing contact lenses is not recommended in the EZ.
- When required to sit or kneel on the ground, avoid contaminated surfaces.
- Placing equipment on contaminated surfaces should be avoided.
- Climbing on or over obstacles is prohibited. Stacks of materials can be unstable and could cause injury.
- Bringing defective or unsafe equipment on site is prohibited.
- Only authorized employees may enter the work site. Visitors must check in with the UXOSO, receive an appropriate safety briefing, and be escorted by UXO qualified personnel at all times while on site.
- Hazard assessment is a continuous process. Personnel must be aware of their surroundings and constantly be aware of the MEC, chemical, and physical hazards that are, or may be, present.
- The number of personnel in the EZ will be the minimum number necessary to perform work tasks in a safe and efficient manner.
- Team members will be familiar with the physical characteristics of each site including wind direction, site access, and the location of communication devices and safety/emergency equipment.
- The location of overhead power lines and underground utilities must be established.

- Detection or appearance of unusual liquids, odors, or discolored soil could indicate the presence of contaminants and must be reported to the UXOSO immediately.
- Site personnel are to report any other unusual or potentially hazardous condition to the UXOSO for investigation and/or corrective action.

7.3.2 Buddy System Protocol

7.3.2.1 The Buddy System is a safety practice in which each individual is concerned with the health and well being of co-workers. The Buddy System will be implemented during all on-site activities and will be incorporated whenever workers may be isolated or as determined by the UXOSO. Additional procedures include:

- A minimum of two personnel, with one being a UXO qualified person, will be present during all MEC operations so that one person will always act as a safety observer. During all MEC operations, only the minimum number of personnel required to safely perform the task will be allowed on-site. All others will evacuate to a pre-designated assembly point.
- At no time will an individual desert his "buddy" unless his "buddy" goes down, and it is considered too hazardous to render assistance. "Buddies" will frequently monitor one another for signs of fatigue, heat stress, and any other problems. In such cases, the worker in danger may not even be aware he/she is having a problem. The "buddy" must always be alert to changes in the behavior of his "buddy" so that he can remove him from the situation immediately.
- "Buddies" should inspect each other's equipment, including PPE, to ensure that it is adequate and in proper working order.

7.3.3 Work permit Requirements/Equipment Use Procedures

7.3.3.1 Equipment use will be subject to the following requirements:

- Heavy equipment utilized on-site will be operated under strict adherence to the applicable OSHA regulations found in OSHA 29 CFR 1910; OSHA 29 CFR 1926; the requirements of USACE EM 385-1-1, Section 18; and the Project Site Safety and Health Plan.
- Utility vehicles utilized on-site will be operated under strict adherence to the requirements of USACE EM 385-1-1, Section 18.
- The requirements outlined in USACE EM 385-1-1, Section 13, will be observed when using hand tools.
- To control the hazards associated with power tool operation, the requirements outlined in USACE EM 385-1-1, Section 13, and the safe work practices will be observed.
- A copy of EM 385-1-1 shall be readily available onsite.

7.3.4 Material Handling Procedures

7.3.4.1 Many types of objects are handled in normal day-to-day operations. Care will be taken in lifting and handling heavy or bulky items because they are the cause of many joint and back injuries. The following fundamentals address the proper lifting of materials to avoid joint and back injuries:

- The size, shape, and weight of the object to be lifted must be considered. Site personnel will not lift more than they can handle comfortably.
- A firm grip on the object is essential; therefore, the hands and object will be free of oil, grease, and water, which might prevent a firm grip.
- The hands, and especially the fingers, will be kept away from any points that cause them to be pinched or crushed, especially when setting the object down.
- The item will be inspected for metal slivers, jagged edges, burrs, rough or slippery surfaces, and pinch points, and gloves will be used, if necessary, to protect the hands.
- The feet will be placed far enough apart for good balance and stability.
- Personnel will ensure that solid footing is available prior to lifting the object.
- When lifting, get as close to the load as possible, bend the legs at the knees, making sure that the back is kept as straight as possible.
- To lift the object, the legs are straightened from their bending position.
- Never carry a load that cannot be seen over or around.
- When placing an object down, the stance and position are identical to that for lifting, with the back kept straight, the legs bent at the knees, and the object lowered.
- If the item to be lifted is too large, bulky, or heavy for one person to safely lift, ask a co-worker for assistance. If a piece of material handling equipment is available that can do the job, the employee should use the equipment instead of trying to lift the object himself/herself.
- When two or more people are required to handle an object, coordination is essential to ensure that the load is lifted uniformly and that the weight is equally divided between the individuals carrying the load. When carrying the object, each person, if possible, will face the direction in which the object is being carried.

7.3.5 Drum/Container Handling Procedures

7.3.5.1 The Project will utilize 55 gallon metal drums to consolidate munitions debris (MD) recovered from this project. Only approved mechanical lifting equipment will be utilized when the drums are too heavy to be moved or lifted by personnel. Proper PPE will be worn when in and around mechanical equipment. Project personnel, to

eliminate the hazards from using mechanical lifting equipment, will follow the guidelines as set forth in Task hazard analysis for heavy equipment operations Table 2-8.

7.4 Additional Work Practices

7.4.1 Hot Work, Sources of Ignition, Fire Protection/Prevention, and Electrical Safety Procedures

7.4.1.1 Under the PWS and activities anticipated for this tasking, there are no requirements for hot work. All site personnel, to eliminate the hazards from ignition sources, will utilize the general, fire safety precautions and procedures outlined in Section 10.3.

7.4.2 Lockout/Tag out Procedures

7.4.2.1 Once a piece of equipment has been identified as not meeting manufacturer safe operating procedure requirements UXOSO will remove equipment from operational use and lockout/tagout defective equipment in accordance with EM-385-1-1. UXOSO will then make an entry in lockout/tagout log. UXOSO will inform personnel, authorized to use equipment, of non-operable status and update as necessary. There will be no operational activities conducted on a system where the unexpected energizing, start up, or release of kinetic or stored energy could occur and cause injury or damage to workers. Routine maintenance, manufacturer service or repair may be conducted with approval by UXOSO, where there is no potential risk for injury to occur.

7.4.3 Fall Protection Procedures

7.4.3.1 The PWS for this project is to safely locate, identify, and make final disposition of all MEC and MEC-related scrap from the site. There will be no activities performed, which meet the requirement for fall protection.

7.4.4 Container Labeling Procedures

7.4.4.1 The UXO Safety Officer will inspect all on-site chemicals to ensure that they are properly labeled with a National Fire Protection Association (NFPA) label, or equivalent information, during the duration of their use at the job site. Any containers, which are missing labels or are transferred into other containers for use, will be labeled with a NFPA label or equivalent information.

7.4.5 Illumination Procedures

7.4.5.1 Conducting MEC operations in poorly illuminated conditions is inherently dangerous. There will be no MEC operations conducted during the hours of darkness.

7.4.6 Housekeeping and Waste Disposal Procedures

7.4.6.1 Specific procedures are defined as:

1. A clear path of ingress/egress to the work site will be prepared and maintained.
2. All equipment and working surfaces will be cleaned and decontaminated after contact with blood or other potentially infectious materials.
3. Contaminated work surfaces and equipment will be decontaminated with an appropriate disinfectant immediately after they become contaminated in accordance with the decontamination section of this program.
4. Regulated waste will be placed in containers, which are capable of being sealed, constructed to contain all contents and prevent leakage, properly labeled or color-coded, and closed prior to removal or replacement. Labels or color-coding will be fluorescent orange or orange-red and display the biohazard symbol in a contrasting color.
5. Contaminated clothing, equipment, and other materials will be handled as little as possible and with minimum agitation. Bags containing contaminated materials will not be carried or handled from the bottom.
6. All regulated waste will be disposed of in accordance with applicable federal, state, and local regulations.

7.4.7 Sanitation Procedures

7.4.7.1 Adequate sanitation facilities will be provided at each work site to ensure proper personal hygiene. Site sanitation will be established and maintained in accordance with OSHA 29 CFR 1910.120(n) and USACE EM 385-1-1, Section 2. In particular:

7.4.7.2 Temporary toilet facilities will be provided in the work areas of the site. Chemical toilets will be used in these locations and will be serviced every week. Each temporary toilet will be naturally lighted, have a toilet seat with a seat cover, have a urinal, have ventilation with vents screened, and be lockable from the inside. There will be at least one toilet for every 15 workers at the work site, if required.

7.4.7.3 Hand and face washing capabilities will be established at the work site. Paper towels will be provided for drying. A trash receptacle will be provided for discarded paper towels. In accordance with ANZI Z358.1-1998, eye wash facilities will be available on the work site where operations in any of the work zones involve handling substances, which could be hazardous to the eyes. An eyewash kit will also be located in each site vehicle.

7.4.7.4 An adequate supply of potable (drinkable) water will be provided on site at all times. As there are no drinking water facilities on most areas of the site, drinking water will be brought in coolers to the work areas of the site and supplied in accordance with the following provisions: Containers used for potable water will be capable of being tightly closed, equipped with a tap, and maintained in a clean and sanitary condition. A container used for distribution of drinking water will be

clearly labeled as to its contents and not used for any other purpose. Water will not be dipped from the container, and use of a common cup will not be allowed.

7.4.7.5 Outlets and storage containers for non-potable water, such as water for firefighting or decontamination, will be clearly labeled to indicate that the water is non-potable. There will, at no time, be a cross connection or open potential between a system furnishing potable water and a system furnishing non-potable water.

7.4.8 Engineering Controls

7.4.8.1 Engineering controls will be used, whenever possible, to eliminate or reduce the potential for employee exposure and will be periodically examined, maintained, or replaced to ensure their effectiveness.

7.4.9 MEC Safety Work Practices

7.4.9.1 MEC safety work practices are defined below:

7.4.9.2 All MEC operations will be conducted in accordance with the requirements of the U.S. Army Corps of Engineers, engineering pamphlet (EP) 385-1-95a, Basic Safety Concepts and Considerations for Ordnance and Explosives (OE) Operations (27 August 2004).

7.4.9.3 Plans are to be based upon the minimum number of personnel, exposed for the minimum amount of time, to the minimum amount of MEC consistent with efficient operations and maximum safety. Only those personnel absolutely necessary to the operation will be allowed in the EZ during MEC activities.

7.4.9.4 All personnel engaged in MEC operations will be thoroughly trained in explosives safety and be capable of recognizing hazardous explosive exposures. Only personnel who are U.S. citizens and graduates of one of the schools or courses outlined in DDESB TP18 are authorized to handle MEC.

7.4.9.5 All non-UXO qualified personnel will follow the safe work practices listed below:

- Non-UXO qualified personnel will receive site-specific MEC recognition training prior to participation in site activities.
- No soil penetrating activities will be allowed without the area first being cleared by UXO qualified personnel.
- Non-UXO qualified personnel will be escorted on-site by UXO qualified personnel, until such time as the area is cleared.
- Non-UXO qualified personnel will not touch or disturb any object that could potentially be MEC related, and will immediately notify the nearest UXO qualified person of the presence of the object.

- The greatest hazard to a UXO technician is complacency. It is imperative that team members are constantly reminded of the inherent dangers associated with MEC. This will be accomplished at the Pre-operations Safety Brief, Tailgate Safety Briefings and during Safety Stand Downs.
- No MEC will be destroyed until it has been positively identified.
- If an unidentifiable MEC is found, or suspected toxic chemical munitions are found, the USACE OE Safety Specialist will request EOD support.
- Do not handle, use, or remain near explosives during the approach or progress of an electrical storm, sandstorm, dust storm, snowstorm, or during any limited visibility condition. All personnel should retire to the enclosed site vehicles until the storm has passed or a location designated by the SUXOS.
- Intrusive activities must be preceded by a magnetometer survey to ensure the safety of the crew.
- Use sand to smother incendiary fires. Water may induce a violent reaction or be completely ineffective, depending on the mixture. Sand will be available on site for this purpose.

7.4.10 Disposal Operations

7.4.10.1 Disposal operations procedures will be accomplished in accordance with the Disposal and Post Disposal Operations Procedures outlined in Section 2.4 of the PWP and the safety precautions listed below:

- The disposal and post disposal operations procedures will be readily available in work areas involved in demolition operations. Supervisory personnel are responsible for the enforcement of its provisions.
- In the event of an electrical storm, action will be taken to cease all disposal range operations and evacuate the area. Additionally, a lightning detector will be utilized when conducting blasting operations.
- All personnel are responsible for reporting all injuries, accidents, and near miss incidents to their supervisors. The supervisor is, in turn, responsible for reporting all injuries, accidents, and near-miss incidents to the UXOSO. These incidents will be reported, by the UXOSO, to the Safety Manager and the OM. All such events will be thoroughly investigated by the Supervisor and the UXOSO to determine the root cause(s) and appropriate actions to be taken to prevent recurrence.
- In the event of a fire or unplanned detonation, if possible, put out the fire if no MEC is involved. Fire extinguishers are to be available at each site for this purpose. If unable to do so, notify the police and fire department POCs in Table 10-1 or Appendix C of the PWP.
- Workers will not tamper with any safety devices or protective equipment.

- Any defect or unusual condition noted that is not covered by this procedure will be reported immediately to supervisory personnel.
- All safety regulations applicable to specific materials involved will be observed.
- All disposal activities will be under the direct control of a State of Hawaii licensed blaster with responsibility for all activities within the disposal area.
- Fire extinguishers and first aid equipment will be readily available during all disposal and post-disposal operations.
- All personnel engaged in MEC disposal operations will wear natural fiber, close-weave clothes, such as 100% cotton material, to include both outer and undergarments. Synthetic materials, such as nylon, polyester, etc., are not authorized unless treated with anti-static material by the manufacturer and so labeled.
- Observers will be stationed at locations where there is a good view of the air and surface approaches to the disposal area before material is detonated. It will be the responsibility of the observers to order the Supervisor to suspend firing if any aircraft, vehicles, or personnel are sighted approaching the general disposal area.
- Special safety requirements for disposal activities include:
    - Fragmentation range for this site will be based upon the MGFD anticipated on the site. The SUXOS will designate a fragmentation range for each item based on technical publication recommendations for distance requirements on the item in question. This will be coordinated with the USACE OE Safety Specialist prior to the demolition operation.
    - Material awaiting destruction will be staged at not less than intra line distance, based on the largest quantity involved, from adjacent explosive materials and from explosives being destroyed. The material will be protected against accidental ignition or explosion from fragments, grass fires, burning embers, or detonating impulse originating in materials being destroyed.
    - Disposal operations will not be conducted during an electrical storm or when a storm is approaching. All operations will be suspended, detonator wires and lead wires will be short circuited, and all personnel must be removed from the disposal area when an electrical storm approaches within 10 miles of the site. A security person will be staged at a safe distance from any charge left in place, to maintain security and prevent unauthorized personnel from going near explosive materials. Additionally, a lightning detector will be utilized when conducting blasting operations.
    - Detonations will be counted to ensure detonation of all pits. After a series of detonations, a search will be made of the surrounding area for kick-outs. Items such as lumps of explosives may be picked up and prepared for the next shot. Fuzed munitions or items that may have internally damaged components will be detonated in placed, if possible.

- In excavating the pits, contour the ground so that runoff water is kept out of the pits.
- Upon completion of the shot, the disturbed ground will be thoroughly inspected for MEC. At a minimum, the holes/pits will be filled in and contoured.

7.5 Accident Prevention

7.5.1 Plan for the Prevention of Alcohol and Drug Abuse

7.5.1.1 The Drug-Free Workplace Act of 1988 set as a goal the elimination of the effects of illegal drugs in the workplace. Due to the inherently hazardous nature of the work performed by Project personnel, the importance of creating and maintaining a safe drug-free working environment is paramount. The performance of every employee must, at all times, support the company's mission to conduct site operations with a high level of productivity, reliability, judgment, and safety.

7.5.1.2 The contractor maintains a commitment to provide reliable service to customers, and a safe and healthy work environment for its employees. While the vast majority of employees are not involved with illegal drugs or alcohol abuse, those who are involved in usage or trafficking, on or off the job, have an adverse impact on the work place and impair our ability to maintain a safe work environment that is free from the effects of drugs or alcohol. While the contractor understands employees under a physician's care are required to use prescription drugs, abuse of prescribed medications will be dealt with in the same manner as the abuse of illegal substances.

7.5.1.3 As a term of access to the work site, maintenance of these standards is expected of all employees, and all employees will refrain from the use, distribution, possession, manufacture, or dispensing of a controlled substance, and drug and/or alcohol abuse. Violation of this policy will result in administrative action to include the possible removal and denial of future access to the site.

7.5.1.4 Recognizing that there may be employees who have a drug or alcohol problem, the contractor stands willing, to work with the partnered companies in the resolution of that problem.

7.5.2 Substance Use and Abuse Policy

7.5.2.1 Employee drug or substance use or abuse testing/screening conducted by the contractor in support of this policy will be conducted at no expense to the employee. The drug or substance abuse for which Project personnel may conduct testing includes, but are not limited to: amphetamines, barbiturates, cocaine metabolites, marijuana, methadone opiates phencyclidine (PCP), and ethyl alcohol. As a matter of policy, the contractor will strictly implement and enforce the policies listed below:

- The illegal use, possession, sale, distribution, or manufacture of illegal drugs, narcotics, or controlled substances while on or off the job is strictly prohibited.
- Illegal drug usage, whether on or off the job, may adversely affect a worker’s job performance, jeopardize the safety of other employees, the public, and/or

the reliability of the operations, and is just cause for disciplinary action up to and including termination of site access.

- If an employee reports to work in a condition giving a supervisor reasonable cause to suspect the influence of alcohol, the employee may be required to submit to a blood and/or urine exam, and if the test reveals that the employees under the influence of alcohol, the employee may be subject to disciplinary action up to and including termination of site access.
- If an employee reports to work in a condition giving a supervisor reasonable cause to suspect the influence of drugs, the employee may be required to submit to a blood and/or urine exam, and if the test reveals that the employee has illegal drugs or other intoxicants in his or her body, the employee may be subject to disciplinary action up to and including termination of site access.
- Any employee who may be undergoing medically prescribed treatment with a controlled substance, which may limit the employee's ability to perform on the job must report this treatment to the UXOSO prior to beginning work or when the person begins treatment with the controlled substance. Failure to report this shall be just cause for appropriate disciplinary action.

7.5.3 Prescription Medications

7.5.3.1 Project personnel may possess and use prescription medications and "over-the-counter" medications provided that all of the following apply:

- The prescription medication has been prescribed by an authorized medical practitioner for the current use (within the past 12 months) of the employee in possession of the medication, and the medication is in its original container with a valid pharmacy label including the employee's name and the physician's name.
- The employee does not consume the prescribed, or over-the-counter, medication in quantities greater than, or more frequently than that prescribed by the container label.
- Employees in possession of prescribed medications shall not allow any other person to consume any amount of their prescribed medication.
- In the event that the prescribed medication could cause adverse side effects, or where the medication indicates warnings relevant to side effects affecting the operation of equipment or machinery, the employee shall inform the SUXOS and/or UXOSO prior to engaging in project operations while under the influence of the medication (i.e., having taken the medication within the past 12 hours).

7.5.3.2 While the on-site, use of prescription and over-the-counter-medications are authorized under the requirements listed above. The contractor reserves the right to have a licensed physician determine if the employee's use of the medication

could adversely affect the individual or could increase the potential for injury or illness to the employee or other site personnel. If consumption of the medication could lead to adverse safety or health effects, the UXO Safety Officer may, on the advice of the licensed physician, limit or suspend the employee's work activities for as long as the licensed physician indicates that the medication may adversely affect the employee. Any employee who has been limited or suspended from work activities may seek from the prescribing physician a substitute medication that will not adversely affect the potential for injury or illness to the employee or other site personnel. If a suitable substitute can be prescribed, and is approved, the UXO Safety Officer may lift the work activity suspension or limitation.

7.5.4 Suspicion Inspections and Testing

7.5.4.1 The intent of the guidelines is to provide managers, supervisors and employees the necessary education, training and information to administer the policy fairly, consistently, and in accordance with this policy. If questions arise, the Program Manager shall be contacted for guidance.

7.5.5 Suspicion Inspections

7.5.5.1 For the purposes of ensuring compliance with the prohibition against the unauthorized possession of controlled substances, workers will be subject to random and reasonable suspicion inspections and testing. A worker's company clothing, locker, closet, work area, desk files, company motor vehicle, and similar areas are subject to inspection. Similarly, a worker's privately owned vehicle, lunch box, and like containers are subject to such inspections when brought to any work site. At no time will an employee be physically touched during an inspection, and only outer clothing required to be removed for inspection or search. No person or property search (except for searches of Contractor-owned, rented, or leased properties), urine drug test, or Breathalyzer test will be conducted without the employee's consent. Refusal to submit to a legal inspection, or request for testing, will result in employee removal from participation in site activities until further inspection or testing can determine the potential for prohibited drug or substance use or abuse.

7.5.6 Drug/Alcohol Screening

7.5.6.1 Drug and alcohol screening will be conducted by each company according to its policy. However, all employees require a pre-employment drug test and are subject to random drug tests, with a minimum of one test annually. The test array/panel will be in accordance with USACE standards. Each company will verify to the UXO Safety Officer or Program Manager that each of their site employees has completed drug testing and advised of the results

7.5.6.2 Drug screens may also be administered with any company physical.

7.5.6.3 Refusal to take a drug screen will result in termination of site access.

7.5.6.4 A positive drug test will result in the OM informing the worker that there is a confirmed positive test. The employee will be directed to contact his company Human Resources department. The employee will not be allowed to return to work on the site until the respective company re-submits their employee as complaint with the Drug and Alcohol site policy, and Contractor access is granted.

7.5.6.5 Respective companies will provide the contractor updates on the status of removed employees.

7.5.6.6 The contractor has the right to fill any vacant position immediately upon termination of a worker's site access.

Section 8 Site Control Measures

8.1 Site Maps

8.1.1 The site maps will be used by the UXOSO during the Pre-operations Safety Briefings to inform the workers of the location of barricades and warning signs going into the EZ, if required. Maps of the project site are included in Appendix B of the PWP.

8.2 Work Zones

8.2.1 Site work zones will be established, by the UXOSO, prior to initiating operations in order to control site access. Establishment of site work zones will be based upon site conditions, activities, and exposure potentials. Whenever possible, site work zones will be clearly marked using placards or signs and enclosed using hazard tape, ropes, chains, or fences. The UXOSO will control access to each work zone and will ensure that all site workers and visitors have received the proper training and medical surveillance required entering a specific zone. Access will be denied to any potential entrant not meeting these requirements.

8.2.2 Exclusion Zone (EZ)

8.2.2.1 The EZ boundaries will be established for the work site and coordinated with the USACE OE Safety Specialist.

8.2.2.2 This is the area where hazards or contamination do or could occur and will include all areas where PPE is required to control worker exposure to physical hazards.

8.2.2.3 During the MEC removal action, the EZ will be established as the minimum separation distances (MSD) for intentional and unintentional detonations.

8.2.2.4 Disposal activities will be conducted on all live or suspect MEC found during the clearance activities. Disposal activities will be conducted at established sites, as described in Chapter 2.4 of the PWP.

8.2.3 Support Zone (SZ)

8.2.3.1 The SZ is the area outside the EZ where site support activities are conducted. This zone includes the PPE changing areas, equipment staging areas, vehicle parking, and break areas.

8.2.3.2 Persons desiring entrance into the EZ must first meet with the UXOSO and receive the appropriate safety briefing before gaining admittance to the EZ. .

8.3 On-site and Off-site Communications

8.3.1.1 Effective on-site and off-site communication is an integral part of site control and will be established prior to initiating site activities. All site personnel will be familiar with the different methods of off-site and on-site communication.

8.3.1.2 On site communication will be used to coordinate site operations, maintain site control, and pass along safety information, such as monitoring results and work/rest periods, and alert site personnel to emergency situations.

8.3.1.3 The methods of on-site communications shall be Cellular telephone, Hand-held radios, and Hand signals.

8.3.1.4 The SUXOS, UXOSO, and individual team leaders will utilize cellular telephones and/or hand-held radios to maintain communications with personnel on site.

8.3.1.5 Upon mobilization to the site, the SUXOS and UXOSO will establish the on-site communication system.

8.3.1.6 Team leaders and site personnel (SUXOS, UXOSO) will be issued cellular telephones, and/or hand-held radios along with a list of contact numbers and call signs of on-site personnel.

8.3.1.7 Team leaders shall perform daily communication checks with the UXOSO.

8.3.1.8 At anytime that communications with the SUXOS or UXOSO cannot be maintained, that on-site team shall stop all activities until communications can be re-established.

8.3.1.9 Hand signals - site personnel will be familiar with the following hand and audible signals:

- hand gripping throat: ***"Breathing problem, can't breathe"***
- thumbs up: ***"OK, I'm all right, I understand"***
- thumbs down: ***"No, negative"***
- pointing to ear(s): ***"Can't hear, don't understand"***
- waving hand(s) over head: ***"Need assistance now"***
- pointing to eyes then pointing to a person/object: ***"Watch person/object closely"***
- grab buddy's wrist: ***"Evacuate site now, no questions"***
- one long horn/siren blast: ***"Evacuate site to assembly point"***
- two short horn/siren blasts: ***"Condition under control, return to site"***

8.3.1.10 Off-site communication is required to ensure effective communication with off site management, USACE OE Safety Specialist, and Emergency Services personnel. The cellular telephone will be the method used to conduct off-site communications.

8.3.1.11 Cellular telephones and other communication devices will not be used near any detonation devices.

8.4 Site Access Control

8.4.1 Site access control will be implemented by the UXOSO and will be accomplished through a program that limits movement and activities of people and equipment at the project site.

8.4.1.1 Site control procedures will be modified by the UXOSO if site conditions change during operations or a breach of the system occurs which would indicate more stringent controls need to be enacted.

8.4.1.2 Site access control will be based on site-specific characteristics including:

- potential chemical, biological, physical, or explosive hazards;
- expected weather conditions; and
- planned site activities.

8.5 Site Security

8.5.1 Physical Site Security

8.5.1.1 Project site access will be via existing paved and unpaved roads. Posting signs and barricades at the end of the paved road where the unpaved road begins will prevent general access, via the paved road, where required. Routinely, operations are conducted within locked fenced areas and in areas with a great degree of visibility, enabling teams to stop operations prior to endangerment of non-essential personnel. Aside from that access route, no other public roadways will have to be blocked during operations. Coordination, by the USACE OE Safety Specialist, will be made with local authorities in the event that any public roads must be blocked as a result of operations.

8.5.2 Procedural Site Security

8.5.2.1 Only the personnel essential to the site operations will be granted unlimited access to the work site. All other personnel will be considered visitors and the provisions of Section 3.1 will be implemented by the SUXOS and UXOSO.

8.5.2.2 Personnel desiring entry onto the areas where activities are to be conducted are required to register at the Project Site Office prior to being allowed entry.

8.5.2.3 All MEC clearance, investigations and disposal operations must cease when visitors and non-essential personnel enter the exclusion zone.

8.5.3 Worker/Visitor Registration

8.5.3.1 The UXOSO will be responsible for logging in/out all personnel who enter the work area.

8.5.3.2 Visitors will receive a safety briefing outlining the potential hazards, control measures, limits of site, and access to the site. The USACE OE Safety Specialist will be notified of all personnel entering into the work area within their boundaries.

8.5.3.3 A UXO qualified individual will escort visitors into the work area at all times.

8.5.3.4 All workers and visitors in the work area will wear all PPE required for their activities in the site.

8.5.3.5 Posting of Site/Work Area Boundaries

8.5.3.6 The contractor will place placarded barricades at the access routes to the MEC removal site, when required.

Section 9 Personal Hygiene and Decontamination

9.1 Hazardous and toxic wastes are not anticipated during activities under the PWS. Environmental sampling and chemical analysis are not required as part of the PWS. The site is not suspected to contain radiological waste or CWM.

9.1.1 Personnel Decontamination

9.1.1.1 A program for the personal decontamination of on-site workers is not an anticipated requirement during activities under the PWS. However, every project employee and site visitor will take normal personal hygiene precautions during activities being conducted on-site.

9.1.1.2 Adequate sanitation facilities will be provided at each work site to ensure proper personal hygiene. Site sanitation will be established and maintained in accordance with OSHA 29 CFR 1910.120(n) and USACE EM 385-1-1, Section 2. All personnel will be expected to maintain on-site personal hygiene.

9.1.1.3 If site conditions change or unanticipated hazardous contamination is encountered, work will be suspended. The USACE OE Safety Specialist will be notified, and the appropriate procedures will be developed and submitted for approval before work is resumed.

9.1.2 Equipment Decontamination

9.1.2.1 Based on the PWS and previous activities conducted at the site CWM is not expected within the project area. Therefore, related decontamination procedures are not applicable.

9.1.2.2 The analysis of hazards of concern presented by each task, under work to be performed at the site, does not reflect the requirement for equipment decontamination at this time.

9.1.2.3 If site conditions change or unanticipated hazardous contamination is encountered, work will be suspended; the USACE OE Safety Specialist, still to be determined, will be notified; and the appropriate procedures will be developed and submitted for approval before work is resumed.

9.1.2.4 General decontamination procedures that might apply to a given situation and would occur in the CRZ for equipment decontamination when exiting the EZ include:

- All equipment, working surfaces and non-working surfaces will be decontaminated after contact with potentially infectious materials. A solution of 10 parts water to 1 part bleach, or equally effective material, will be used to clean contaminated areas.
- Any equipment leaving the site will be inspected and if needed, will be cleaned with soap and water to remove any visible contamination.
- Contaminated, sharp objects will be cleaned up using mechanical means, such as a brush and dustpan. Sharp objects will not be picked up directly with the hands.
- Two pairs of gloves, inner surgical gloves and outer utility gloves will be worn for cleaning contaminated surfaces. A smock or apron and eye protection will also be worn.
- Only those workers directly involved with the decontamination efforts will be allowed in the work area while cleaning is taking place.
- All cleaning equipment will be disinfected or disposed of in accordance with this section.
- For minor injuries where the employee is able to return to work, the injured worker will clean up his/her own blood or other potentially infectious materials.

Section 10 Emergency Procedures, Equipment and First Aid

10.1 Introduction

A thorough emergency response and contingency procedures shall be designed and implemented to handle anticipated emergencies on site prior to commencement of hazardous waste activities. This can dramatically reduce the severity of emergencies. The procedures outlined in this document shall be implemented prior to and reviewed during the conduct of any site activities that involves the possibility of personnel exposure to safety and health hazards.

10.2 Potential Emergencies

10.2.1 The following are the potential emergencies that may arise during the conduct of activities under the PWS:

- injury or illness associated with physical or biological hazards;
- inclement weather;
- fire; and
- personal injury from the unintentional detonation of MEC.

10.3 Emergency Services

10.3.1 Availability and Communications for Emergency Services

10.3.1.1 The UXOSO shall verify the availability of all local emergency services and to confirm the procedures used to request the service. It shall be the responsibility of the SUXOS to ensure that adequate off-site communications are available at all times. A break in off-site communications shall result in the temporary halting of all on-site activities until communications are reestablished. Off-site communications shall be accomplished using telephone service to the responsible support agencies. Emergency telephone numbers are presented in this plan and the UXOSO shall post in the site office and in all site vehicles. All site personnel will receive a period of instruction on the procedures for obtaining off-site emergency services.

10.3.2 Personnel and Lines of Authority for Emergency Procedures

10.3.2.1 To ensure a smooth process during an emergency response, the following positions have been established. Site personnel and local points of contact will be notified of

changes to personnel roles, lines of authority, and communications as they take place.

10.3.3 On-scene Incident Commander

10.3.3.1 In the event of an emergency, the UXOSO will assume the responsibility of the On-scene Incident Commander. The SUXOS will assist the UXOSO, and in the event that the UXOSO is unavailable or incapacitated, the SUXOS will be the alternate person to assume this role. The On-scene Incident Commander will have the responsibility of directing all on-site and off-site emergency response personnel until relieved by competent authority, and shall advise the USACE OE Safety Specialist of the emergency as soon as possible.

10.3.4 On-site Emergency Response Personnel

10.3.4.1 During site activities project personnel will act in the role of on-site emergency response personnel. Those personnel assigned to these tasks will be designated by the SUXOS prior to initiation of site activities involving the potential for an on-site emergency. Project on-site emergency response personnel will receive training in the response actions that they will be authorized and directed to perform during a site emergency

10.3.5 Initial Reporting Procedures

10.3.5.1 At the onset of an emergency, the respective team leader will contact the UXOSO and/or the SUXOS to start the emergency response action. Once action is initiated, the SUXOS will notify the USACE OE Safety Specialist as soon as possible. The UXOSO will ensure that remaining site personnel are advised of the situation and informed of their proper response procedures. Personnel will be notified to, as appropriate:

- stop work activities;
- evacuate to the team vehicles and proceed to the work site "Personnel Emergency Rally Point" (described daily during the "Pre-operations Safety Briefing", by the UXOSO);
- begin emergency procedures; and
- notify off-site emergency response organizations.

10.3.6 Emergency Recognition, Prevention, and Site Evacuation

10.3.6.1 Prevention of emergencies will be aided by the effective implementation of the SSHP, personnel awareness, contingency planning, and on-site safety meetings. Anticipated emergencies may include physical injury, fire, explosion, inclement weather, and natural disasters. The UXOSO will use the site-specific briefing

and/or the Pre-operations Safety Briefings to inform site workers of the recognition, prevention, and response procedures for each anticipated emergency.

10.3.6.2 The prevention of fire is a primary concern for this project; therefore, smoking on-site is prohibited.

10.3.7 Fire Fighting Plan

10.3.7.1 If a fire is detected in the field or the shop/office location, follow the procedures detailed above for the initial emergency reporting, evacuation and response.

10.3.7.2 These emergency plans to ensure employee safety in case of fire or other emergency will be reviewed with all affected employees. Emergency plans will be tested to ensure their effectiveness and improved as needed.

10.3.7.3 Escape and evacuation routes will be posted in all areas and briefed by supervisors before all activities are performed. A rally point for evacuations will be identified for every area of work in the morning safety brief and at the supervisor's tailgate safety briefing. Team Supervisors, the SUXOS and SSHO will conduct employee accounting following an emergency evacuation. Anyone not identified will be contacted via communications devices and/or searched for. As stated, the SSHO will act as incident commander until relieved by response personnel. He/she may assign rescue and medical duties to available and qualified personnel as necessary to assist in the response. Emergency contacts can be found in Table 10-1, Appendix C, and in every vehicle and phone location. The main method of reporting will be by cellular telephones with radios and land-lines as alternate forms of communication.

10.3.7.4 On-site emergency planning will be integrated with off-site emergency support. Documentation of specific on-site emergency services shall be made and may include written agreements, memoranda for record, telephone conversation logs. The emergency services provider will be offered an on-site orientation of the project and associated hazards.

10.3.7.5 Employees working alone in a remote location or away from other workers will be provided two effective means of emergency communications. This means of communication will include a cellular phone and two-way radios or hard-line telephones or other acceptable means. The selected communication will be readily available (easily within the immediate reach) of the employee and will be tested prior to the start of work to verify that it effectively operates in the area/environment. An employee check-in/check-out communication is required every morning before leaving the shop, once on site, and randomly throughout the day.

10.3.8 Small Fires

10.3.8.1 A small fire is defined as a fire that can most likely be extinguished by site personnel using a Type 2A, Class 10BC portable fire extinguishers. The decision on whether or not to try to extinguish a fire using available site personnel and equipment will be made by the Team Supervisor based on whether the fire is small, large, or involves explosives. The following actions shall be taken in the event of a small fire:

- The UXOSO and/or SUXOS shall be notified immediately. The SUXOS will notify the USACE OE Safety Specialist.
- All unnecessary personnel shall be evacuated to an unwind position.
- Personnel shall attempt extinguish the fire from an upwind position.
- The UXOSO/On-site Incident Commander will request any emergency response services if needed.
- All personnel shall be prevented from fighting a fire if the possibility of explosive materials is involved.
- After the fire has been extinguished, the area around where the fire occurred must be watched for a minimum of 30 minutes to ensure that re-ignition does not occur. If personnel are not working in the area, the UXOSO should check the area of the fire periodically.
- Although the fire has been extinguished, the local fire department will be informed of the event.

10.3.9 Large Fires

10.3.9.1 In the event that a large fire occurs or a small fire cannot be extinguished, the following actions shall be taken:

- The UXOSO and/or SUXOS shall be notified immediately. The SUXOS will notify the USACE OE Safety Specialist.
- All unnecessary personnel shall be evacuated to an unwind position.
- The UXOSO/On-site Incident Commander shall request local emergency response services necessary to handle the situation.
- To the extent possible, the UXOSO/On-site Incident Commander will direct personnel to move vital equipment/supplies form the fire's path, if this can be accomplished safely.
- To the safest extent possible, available resources shall be used to fight the fire, but only from an upwind position.
- No personnel shall attempt to fight a fire that may involve explosive materials.

- The UXOSO shall warn responding personnel of location of any known hazards (i.e., MEC, flammable materials, etc.).

10.3.10 Fires Involving Explosive Materials

10.3.10.1 If a fire occurs which involves explosive materials, such as chemicals, fuels or MEC, the UXOSO/On-site Incident Commander will order the immediate evacuation of all site personnel to an upwind assembly point at least the MSD (200 feet) from the fire site. At no time will project personnel fight a fire involving explosive materials. The USACE OE Safety Specialist will be advised of the situation and the requirement that fire fighting personnel should not enter any closer than the EZ from the fire and may spray water to surrounding buildings, structures, etc., in order to prevent the spread of fire. Cellular phones will not be used around Flammable Liquids in accordance with OE Safety Group Safety Advisory 03-2003.

10.3.10.2 After the fire has burned itself out, the site must be barricaded and entry prohibited until adequate cooling time has passed. The cool-down period should be a minimum of 24 hours. Explosive materials that may not have discharged during the fire may still be liable to function in the presence of extreme heat. After the site has cooled down, the SUXOS and UXOSO will inspect the site and the condition of any MEC involved in the fire to make a determination as to whether or not the site is safe for others to enter.

10.3.10.3 If MEC is still intact, the SUXOS will determine whether or not it is safe to move. If it is considered unsafe to move, it will be left in place and non-UXO personnel will be prevented from going into the area. The MEC will be reported to the USACE OE Safety Specialist.

10.3.10.4 If non-UXO qualified personnel must enter the site for purposes of fire investigation, etc., they must receive a briefing on the potential hazards of MEC on the site. They must be accompanied, at all times, by a UXO qualified person. No outside personnel will be permitted on site while there is a known MEC hazard present.

10.3.10.5 If, during the course of the investigation, MEC is observed, the site will be evacuated of all non-UXO qualified personnel until the site can be rendered safe for re-entry.

10.3.11 Unintentional Detonations

10.3.11.1 In the event of an unintentional detonation all non-essential site personnel shall be evacuated to a safe, upwind assembly point outside the EZ. The UXOSO/On-site Incident Commander, the SUXOS, and the 8USACE OE Safety Specialist shall be immediately notified of the situation and the UXOSO/On-site Incident Commander shall request the required emergency response services needed. After an

unintentional detonation has occurred, The SUXOS and the UXOSO will enter the site and inspect for the presence and condition of MEC.

10.3.11.2 If MEC is still intact, the SUXOS and UXOSO will determine whether or not it is acceptable to move. If it is considered unacceptable to move, it will be left in place and non-UXO personnel will be prevented from going into the area. The MEC will be reported to the USACE OE Safety Specialist.

10.3.12 Inclement Weather

10.3.12.1.1 Inclement weather may necessitate ceasing site operations and the evacuation of personnel from the work area. Heavy precipitation, high winds, electrical storms, or cold-damp weather may affect workers ability to function properly. When local news advises and also when visible weather conditions dictate, the SUXOS will check for weather advisories. The UXOSO shall be responsible for obtaining daily local weather advisories and ensuring that the SUXOS is informed of possible adverse forecasts. When inclement weather does occur, the procedures outlined below shall be followed.

10.3.13 Heavy Precipitation

10.3.13.1 The UXOSO shall be alert when the possibility of heavy precipitation is forecasted even if expected in distant areas from the work site. The UXOSO shall assess each work site to determine if the area is prone to flash flooding. Site operations shall be halted, equipment will be secured, and personnel shall withdraw to adequate shelter. The SUXOS will be responsible to determine when operations shall resume, after consultation with the UXOSO.

10.3.14 High Winds

10.3.14.1 High winds may create conditions that threaten the safety of workers. The UXOSO may determine that wind conditions are at a level that site operations shall be halted, equipment will be secured, and personnel shall withdraw to adequate shelter. The SUXOS will be responsible to determine when operations shall resume, after consultation with the UXOSO.

10.3.15 Electrical Storms

10.3.15.1 Electrical storms, with their associated lightening, present a significant hazard to site workers. The UXOSO shall be responsible for obtaining daily local weather advisories and ensuring that the SUXOS is informed of possible adverse forecasts. He will monitor local weather stations for electrical storm advisories. Once a storm is within 10 miles of the site, blasting operations will be terminated. Ten miles will be determined by a lightning detector, the time lapse between thunder and lightning displays and/or the visible proximity of the lightning. All other workers may remain on-site unless the UXOSO determines that it is unsafe to remain on site. If a team supervisor sights lightning, he shall immediately notify UXOSO. The

UXOSO will evaluate location of storm and if it is an impending threat, he shall call for the evacuation of the site. Once the storm is outside the 10 mile range of the work site, blasting work may resume if all other factors are favorable. Additionally, a lightning detector will be utilized when conducting blasting operations.

10.3.16 Cold-Damp Weather

10.3.16.1 Severe weather and cold weather conditions are not anticipated during activities to be conducted under the PWS. However, whenever you go into an environment that is less than your body temperature, you are exposed to a Cold Challenge. Cold weather can lower body temperature, resulting in impaired performance and cold injuries. When protection from clothing and shelter is inadequate, the body protects its temperature by reducing skin blood flow and by shivering.

10.3.16.2 The UXOSO will cover cold injury precautions and procedures with workers prior to the start of the project. Employees shall monitor each other for the effects of cold weather. Supervisors and the UXOSO will be notified when workers show signs of cold weather injuries.

10.3.17White Phosphorus (WP) Procedures

10.3.17.1 Do not approach a smoking WP munition. Burning WP may detonate the burster. Assume that WP munitions with explosive bursters are present until investigation proves otherwise. Use protective equipment and have first aid items available and ready for use. Please reference 60A-1-1-22 (Explosive Ordnance Disposal Procedures – General EOD Safety Precautions) for additional information and PPE requirements.

10.3.18CWM Procedures

10.3.18.1 The site is not suspected to contain CWM. However, if suspect CWM is encountered during any phase of site activities personnel shall withdraw upwind from the work area, secure the site and contact the USACE OE Safety Specialist.

10.3.18.2 All work will immediately cease. Project personnel will withdraw along cleared paths upwind from the discovery.

10.3.18.3 A team consisting of a minimum of two UXO Tech II or above personnel will secure the area to prevent unauthorized access. Personnel should position themselves as far upwind as possible while still maintaining security of the area.

10.3.18.4 The SUXOS will notify the USACE OE Safety Specialist to facilitate MEC response and two UXO Technician II or above personnel will secure the site until the explosive ordnance disposal (EOD) unit's arrival.

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Figure 10-1: Hospital Route Map for Clearance Areas

10.3.19 Material Safety Data Sheets

10.3.19.1 MSDSs for each hazardous substance anticipated to be encountered on site will be made accessible to personnel at all times and shall be maintained on site. Appendix J of the PWP contains examples of the MSDSs maintained at the site. The specific sheets will be constantly updated on-site based on the hazardous materials being utilized at the job site.

10.4 Emergency Response Plan

10.4.1 Operations

10.4.1.1 Operations requiring the use of hazardous substances are not anticipated for this project, but may be encountered in the clearing of MEC or in fires involving explosive materials (Section 10.3.3.3).

10.4.2 Pre-Emergency Planning

10.4.2.1 The UXOSO will perform pre-emergency planning before starting field activities and will coordinate emergency response with emergency medical technician (EMT)/police/fire personnel when appropriate. Pre-emergency planning meetings shall be used to inform local authorities of the nature of site activities that will be performed under the PWS and the potential hazards that activities may pose to site workers, the environment, and the public. The UXOSO will verify all on-site emergency services information, to include telephone numbers and procedures for requesting services. It shall be the responsibility of the UXOSO to post these procedures and telephone contact numbers in accordance with the requirements of this document.

10.4.3 Personnel Roles and Responsibilities

10.4.3.1 Project workers and subcontractors are responsible for reporting all injuries or occupationally related illnesses as soon as possible to the SUXOS and the UXOSO. The SUXOS is responsible for notifying the USACE OE Safety Specialist and the Program Manager as soon as possible after learning of the incident. He shall immediately report to the Program Manager any incident, which could bring adverse attention or publicity to the U.S. Army, the Corps of Engineers, or Project. The UXOSO shall notify the Safety and Health Manager of all accidents within 24-hours. He shall initiate an investigation and document all information pertaining to the incident. The Program Manager shall notify the USACE, Pacific Ocean, Honolulu (POH) District Contracting Officer telephonically as soon as possible after learning of the incident. He shall forward any reports required.

10.4.4 OESS & Contracting Officer

10.4.4.1 Any accident will be reported immediately to the USACE OE Safety Specialist.

10.4.4.2 All recordable accidents/injuries will be submitted to the USACE OESS within 24 hours on POD form 265-R. A follow up report will be submitted to the USACE OESS within 24 hours of any changes or additional information related to the accident. Accidents/incidents, which result in a fatality, injury of employees, lost workdays, and/or property damage assessed at a cost of $2,000 or more, shall be reported telephonically to the Government Contracting Officer as soon as possible after learning of the incident. The report shall contain as much information as is known concerning the incident. An engineering (ENG) Form 3394 (see Appendix F of the PWP) shall be completed by the contractor and forwarded to the Government Contracting Officer via the USACE OESS within 5 working days after the incident in accordance with the instructions attached to the form. The ENG Form 3394 shall be legible and signed by the supervisor of the person injured and by the UXO Safety Officer.

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Table 10-1 Emergency Contact Numbers

Contact	Agency	Telephone Number
Ground and Air Ambulance		**911**
Emergency Medical Treatment	North Hawaii Community Hospital 67-1125 Mamalahoa Hwy Kamuela, HI 96743	**911** or Non-emergency (808) 885-4444
Local Police (Emergency)	Waimea-South Kohala District Police Station	**911** or Non-emergency (808) 885-0422
Local Fire Department (Emergency)	Fire Communications Department, County of Hawaii	**911** or Non-emergency (808) 961-8336
National Poison Control Center	Hawaii Poison Center	1-800-222-1222 or 1-808-941-4411
Centers for Disease Control **http://www.cdc.gov/health/diseases.htm**	Centers for Disease Control	(800) 311-3435 (404) 639-3534
OPM, Mr. Brian D. Stepp	Environet	(808) 754-1914
Call Before You Dig' for all underground excavation activities	Hawaii One Call Center	(866) 423-7287
Field Office Manager, Mr. Casey Francis	Environet	(808) 366-4907
UXO Safety Officer Dan Haines	Environet	(808) 354-4599
SUXOS Don Johnson	Environet	(808) 729-6506
Mr. Dan Nakamura	U.S. Army Corps of Engineers, Honolulu District Prog. Manager	(808) 438-6934
Mr. Walter Nagai	U.S. Army Corps of Engineers, Honolulu District Project Manager	(808) 438-1232 (808) 265-4610
Mr. Harmon Slappy	U.S. Army Corps of Engineers, Honolulu OE Safety Specialist	(808) 294-3583
CHEMTREC		(800) 424-9300
National Response Center		(800) 424-8802
EPA Environmental Response Team (ERT)		(800) 424-8802 or (202) 267-2675

CHEMTREC = Chemical Transportation Emergency Center

10.4.5 Emergency Recognition and Response Procedures

10.4.5.1 An on-site emergency scenario for this project consists of an uncontrolled detonation of ordnance. In the event of an on-site emergency the individual team leader or first person aware of the emergency will contact the SUXOS or UXOSO by field radio or cellular phone. The UXOSO and/or the SUXOS will normally be responsible for requesting emergency services. If the order is given to evacuate the site of all personnel, each on-site team leader will assemble, account for, and evacuate all team personnel to the pre-designated rally point. The UXOSO or the SUXOS will initially instruct the on-site CPR/First Aid trained personnel to respond to the emergency. These individuals shall render emergency first aid treatment and stay with the injured until relieved by off-site emergency services personnel.

10.4.5.2 All accidents that occur incidentally to an operation, project, or facility shall be investigated, reported, and analyzed.

10.4.6 Safe Distances and Staging Areas

10.4.6.1 Work zones will be established and posted to prevent unauthorized persons from entering into hazardous areas. As established, in Section 8.2.1 the site EZ is to protect nonessential personnel from blast overpressure and fragmentation hazards. The EZ shall be at a distance equal to or greater than the MSD (Appendix G of the PWP) calculated by the USAESCH Directorate of Engineering.

10.4.6.2 The UXOSO, in conjunction with the SUXOS, will identify the rally point, outside the EZ, for the various work areas on the site. These rally points will be identified on the site map and will be communicated each morning to workers during the pre-operations safety briefings. In the event of the need to suspend operations and evacuate the work site, all personnel will proceed to the rally point where personnel shall be accounted for.

10.4.7 Site Security and Control

10.4.7.1 During an emergency, site security and control will be paramount to control any possibility of negative effects on the public. Upon notification of an emergency, each team leader will be responsible for accounting for and evacuation of their team personnel to the Staging Area. Once the team has evacuated, the team leader will report its completion to the UXOSO, acting as the On-site Incident Commander. At that time the team leader will ensure that personnel not authorized by the On-site Incident Commander are not allowed access into the EZ. If project personnel are needed for other response actions, the On-site Incident Commander will request assistance from the USACE OE Safety Specialist representative. The USACE OE Safety Specialist will then request security and access control services from the local police or sheriff department.

10.4.8 Evacuation Routes and Procedures

10.4.8.1 An on-site emergency scenario for this project consists is an unintentional detonation of ordnance. In the event of such an emergency, an alarm will be sounded by air horn (a series of long blasts) and verbal instruction given by the UXOSO to evacuate the area to the work site "Rally Point."

10.4.8.2 The clearance locations change daily and personnel will be briefed on the locations of the rally points during the pre-operation Daily Safety Briefing. The location of the rally point may change as work activity progresses within the project area.

10.4.8.3 After evacuation, the UXOSO will account for all personnel, ascertain information about the emergency, and advise responding on-site personnel. The UXOSO will contact, advise, and coordinate with responding off-site emergency personnel, if deemed necessary by the situation or the USACE OE Safety Specialist.

10.4.8.4 In all situations that require evacuation, personnel will not re-enter the work area until the conditions causing the emergency have been corrected; the hazard reassessed; the SSHP has been revised and reviewed with on-site personnel, if needed; and instructions have been given for authorized re-entry by the UXOSO.

10.4.8.5 The route directions to the medical facility will be posted in the project office, at the work site, and in site vehicles. This map (Figure 10.1) also will indicate the evacuation route.

10.4.9 Decontamination Procedures

10.4.9.1 It is not anticipated that hazardous waste decontamination shall be required during any activities under the PWS. This determination has been made based upon archival documentation and past activities conducted at the site.

10.4.10Medical Emergency

10.4.10.1 A medical emergency exists if there are one or more of the following conditions:

1. A patient's condition requires rapid transportation in order to sustain life, prevent further aggravation of a serious injury or illness and the ground transport time is greater than 30 minutes.
2. Emergency life-saving treatment is required at a medical facility.
3. There is an urgent need for emergency transfer of limited and essential resources.

10.4.10.2 If due to Clearance Team's location, effective means of ground transportation is not available or effective within 30 minutes, UXOSO shall contact 911 dispatch and request helicopter extraction from team's geographic location.

10.4.11Life Threatening Emergencies

10.4.11.1 Trauma:

4. Head injuries with loss of consciousness, papillary changes and/or neurological deficits.
5. Fractures of the pelvis, femur or ribs with associated signs and symptoms of shock.
6. Severe fractures of one or more extremities (open and/or closed) associated with severe bleeding and signs of shock.
7. Uncontrolled chest or brain hemorrhage.
8. Penetrating abdominal wound(s).
9. Blunt abdominal or chest trauma associated with hypotension.
10. Injuries to the chest or abdomen with signs and symptoms of shock, hypotension, severe bleeding, cyanosis or respiratory distress.
11. Severe maxillofacial injuries.
12. Severe eye injuries.
13. Shock (hemorrhagic, anaphylactic, et. al., to exclude cardiogenic shock).

10.4.12Medical Emergencies

10.4.12.1 Such as:

1. Abdominal pain of undetermined cause and symptoms of shock.
2. Near drowning.
3. Respiratory distress.
4. Medical Emergency Procedures

10.4.12.2 Only qualified personnel shall give first aid and stabilize an individual needing assistance. Life support techniques such as CPR and treatment of life threatening problems such as airway obstruction, and shock will be given top priority. First aid will be administered in accordance with the universal precautions required by the OSHA Blood borne Pathogens Standard. Professional medical assistance shall be obtained at the earliest possible opportunity, if required.

10.4.12.3 Minor Injury

- Contact Supervisor or "buddy."
- Treat injury.

  -Investigate injury and contact UXOSO who will then record information on accident/injury forms as appropriate.

10.4.13 Emergency Evacuation shall be by the most efficient means.

10.4.13.1 Team will make determination as to best possible modes of transportation depending upon work location, severity or time constraints.

1. Victim can be transported by team truck to the hospital
2. Victim can be transported to rally point and meet ambulance for transport to hospital
3. Victim must be transported by helicopter

Medical Emergency/Trauma (Team Truck)

- Team Supervisor contacts UXOSO to advise of the situation
- Team supervisor and team members assist victim into team truck
- Driver proceeds to hospital via most expedient route.

Medical Emergency/Trauma (Team Truck/Ambulance)

- Driver transports victim to rally point to meet ambulance
- Transfer victim from team truck to ambulance.

Medical Emergency/Trauma (Helicopter extraction required)

- Team Personnel will render first aid as necessary.
- Clearance Team Supervisor will notify UXOSO immediately and request medical assistance as necessary.
- Team Supervisor will survey scene and evaluate whether the area is safe for helicopter entry if required.
- Team Supervisor will direct the removal of the sick/injured person(s) from immediate danger.
- Team Supervisor will locate a suitable landing zone for the helicopter.
- Team Supervisor will direct a team member to monitor and direct helicopter approach to the landing zone.
- Team Supervisor will direct team personnel to avoid the aircraft and assist as request by MEDEVAC crew.
- UXOSO will alert North Hawaii Community Hospital of the casualty, to provide emergency situation information and ETA of victim.
- Upon extraction of the victim from the site, it will be secured until accident investigation is conducted.

Fatal Injury

- Notify UXOSO and SUXOS immediately.
- Clearance operations will be suspended and area secured for investigation.
- UXOSO shall immediately contact OM and OESS, who will initiate contact with OSHA and other appropriate agencies.

10.4.13.2 **Emergency and Hospital Route Information**. Current emergency and hospital information shall be posted at the shop, the Project Office and in each vehicle. This is a listing of emergency telephone numbers and map which shows routes to and location of North Hawaii Community Hospital. The Emergency Room is located at the back of the Hospital.

10.4.14 Emergency Alerting

10.4.14.1 It is the responsibility of the SUXOS to ensure that adequate on-site and off-site communications are available at all times. At any time that communications between individual teams and the SUXOS or UXOSO, or to off-site emergency services are lost, field operations shall be suspended until communications is re-established. The telephone numbers for all emergency services and points of contact are listed in Table 10-1. This will be posted in the project office, at the warehouse and with all site vehicles. All site personnel shall be briefed daily on the procedures for obtaining off-site emergency services.

10.4.15 Critique of Emergency Response and Follow-up

10.4.15.1 Prior to the re-start of on-site activities the UXOSO will ensure that sufficient emergency supplies are on hand to replace those used during the emergency. That on-site emergency CPR/First Aid trained personnel are on site, equipped, and prepared to respond. A critique of the emergency response actions taken will be initiated, with the results driven to look for flaws in the system and to improve on the emergency response.

10.4.16 Personal Protective and Emergency Equipment

10.4.16.1 It is the responsibility of the UXOSO to ensure that all individuals performing activities on-site have and use personal protective equipment that will protect the employee from hazards. Section 5 of this SSHP describes the PPE which will be utilized during activities described under the PWS.

10.4.16.2 Due to the type of work that will be taking place at the Waikoloa Maneuver Area project site, Modified Level D will be used (Short Sleeved shirts permitted in the field). Modified Level D should be worn only if the activity in which personnel

are engaged does not have the potential for splash, immersion or any other contact with hazardous substances.

10.5 First Aid Equipment & Requirements

10.5.1 Emergency Kits

10.5.1.1 Table 10-2 lists emergency equipment, which will be maintained on site and available for use during site operations. Emergency equipment shall be maintained in proper working order and checked by assigned personnel daily. It will be the responsibility of the UXOSO to maintain the site emergency equipment in good working order. The UXOSO will inspect all emergency equipment at least weekly to ensure completeness and proper working condition. Any time that emergency equipment is used, will be reported to the UXOSO so that those items used can be replaced immediately. Site operations shall not be allowed to continue if the required emergency equipment is not immediately available on site.

10.5.2 First Aid Kits

10.5.2.1 First aid kits are assigned and approved by the UXOSO. The size and number of first aid kits shall be sufficient to accommodate the maximum number of people on site at any given time. First aid kits will be located in all operational vehicles, each team, and the site office. A large medical kit, with trauma supplies, will be located with the UXOSO.

10.5.3 Biohazard Spill Kit

10.5.3.1 Biohazard kits will be available in each operational vehicle and with each team working inside the Exclusion Zone. The kit will be used any time an injury occurs or where there is the release of body fluids.

10.5.4 Eyewash Kit

10.5.4.1 Portable kits of eyewash will be available during operations at the site where the potential for hazardous materials may contact the eyes. Portable eyewash bottles will be used while the injured person is being transported to the site eye wash station or medical facility.

10.5.5 Portable Fire Extinguishers

10.5.5.1 (See Fire Prevention Plan and Table 10-2 below)

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Table 10-2: Emergency Equipment

Emergency Equipment	Qty	Location Used/Stored	Operation Requiring Equipment
First Aid Kit	1	Each Vehicle Site Office	All operations
Biohazard Kit	1	Each Team Site Office	All operations
Portable Eye Wash Kit	1	Each Team	All operations
Large Medical Kit with Trauma supplies	1	UXOSO Vehicle Disposal team	All operations
Portable Stretcher	1	UXOSO Vehicle SUXOS Vehicle Each Team	All operations
Fire Extinguisher	1	Each Vehicle Site Office Flammable/Explosive Storage area Applicable Field Operations	All operations
Spill Containment Supplies	1	Flam. Lockers Shop Field refueling operations	Operations involving Hazardous Materials

10.6 Fire Prevention Plan

10.6.1.1 List of potential fire hazards include:

10.6.1.1.1 Flammable and combustible liquids stored in the flammable storage lockers at the shop (See Attachment D-1-B for flammable storage locations and a complete chemical inventory) or in temporary DOT approved containers for field refueling.

10.6.1.1.2 Flammable gas mixtures on vehicles and equipment including small manufactured tanks on gasoline powered brush cutting equipment.

10.6.1.1.3 Explosives in shipping, handling and use for the disposal of found UXO.

10.6.1.1.4 Explosives exposed or contained in UXO have an explosive and fire hazard.

10.6.1.1.5 Dry brush, grass, and organic material pose a fire hazard.

10.6.1.2 A list of potential ignition sources:

10.6.1.2.1 Hot engine surfaces and exhaust on vehicles and equipment.

10.6.1.2.2 Lit or smoldering tobacco products and flame producing devices.

10.6.1.2.3 Intentional explosive disposal operations could be a source for brush fire ignitions.

10.6.1.2.4 Electrical circuits or malfunctions (e.g. battery chargers, unserviceable cords or equipment.)

10.6.1.3 Fire Prevention Measures:

10.6.1.3.1 Initial and periodic Fire Safety training that includes fire extinguisher training, identification of fire hazards on site, restrictions on flame and spark producing devices in fire hazard areas, and good housekeeping and safe storage IAW the HAZCOM Program (Appendix D-1-B), EM 385-1-1 Section 9 Fire Protection and Prevention, and local HI fire code.

10.6.1.3.2 During high fire hazard activities, such as brush cutting during dry conditions, at least one fire extinguisher, rated at least 2A:40B:C, will be located near the refueling site where only DOT approved gasoline containers will be utilized. A spill kit and spill catch pan/container will be used for refueling of small equipment and engines must be given at least 15 min. to allow for cool down before refueling.

10.6.1.3.3 Due to the high fire hazard conditions, no smoking is allowed anywhere in the field. Also, no smoking is allowed within 50 feet of the shop/office building. Smoking will only be permitted in designated locations more than 50 feet from outdoor, approved, metal flammable storage lockers. Appropriate butt cans will be utilized for extinguishing and containing lit cigarettes. A lid will be required and secured to the top of the butt can when not in use. All flammable, combustible, or oxidizing material storage locations will be conspicuously marked “NO SMOKING, MATCHES, OR OPEN FLAME”.

10.6.1.3.4 Measures to reduce and control the growth of tall grass, brush, and weeds adjacent to facilities will be performed. A break of 3 feet will be maintained around buildings. A break of 50 feet will be maintained around the explosives storage magazine of all combustible and flammable materials, including brush, weeds, and grass.

10.6.1.3.5 Gasoline and/or oil soiled rags will be stored in a non-flammable, UL Listed, self-closing, storage container at the shop and will not be inter-mixed with other materials. Paint-soiled clothing and drop clothes, when not in use, will be stored in well-ventilated steel cabinets or containers. Flammable or combustible materials will not be allowed to gather in or near the building. A good housekeeping program will be enforced and inspected by the UXOSO.

10.6.1.3.6 Fire lanes providing access to all areas will be established and maintained free of obstruction. No flammable or combustible materials will be stored in stairways, hallways or near personnel exit routes.

10.6.1.3.7 Vehicles, equipment, materials, and supplies will not be placed so that access to fire hydrants and other firefighting equipment are obstructed.

10.6.1.3.8 Utilize licensed electricians, UL listed supplies, equipment, and devices. Recommendations of the NFPA shall be complied with in situations not covered by this plan. Where local building codes are established, the more stringent requirements will apply.

10.6.1.4 Fire Detection and Employee Fire Alarm

10.6.1.4.1 Smoke and fire detectors will be located in the shop and office locations according to code. In the field, members of the team will perform fire patrol, especially during high fire hazard activities such as brush cutting.

10.6.1.4.2 Each team in the field and at several key locations in the shop and office building, air horns are provided for sounding the fire and/or evacuation alarm. Posted along with the air horn on the walls are instructions for utilizing the air horn for this purpose. One long blast followed by subsequent long blasts as evacuating indicates to all employees in the field or building to evacuate to the nearest rally point designated for that location. Employees are instructed to call 911 on cell phones as soon as possible. Three quick, short blasts indicate all clear after an accountability of all employees has been performed and the response agency has deemed the building or work area clear from the hazard.

10.6.1.5 Fire suppression Equipment

10.6.1.5.1 The fire extinguishers listed below will be positioned at the locations specified to ensure their availability to fight fires on site (See Attachment D-1-B for locations of fire extinguishers at the shop/office location. Fire extinguishers will be stored where they are well marked and readily accessible. Fire extinguishers shall be protected from the damaging effects of environmental elements. The UXOSO is responsible to ensure that all fire extinguishers are visually inspected monthly and weighed every six months. The inspections are documented on inspection stickers and a fire extinguisher log. All site personnel will be familiar with the locations of fire extinguishers and will be trained in their use.

10.6.1.5.2 All vehicles shall be equipped with a fire extinguisher rated at not less than 1A 10B:C.

10.6.1.5.3 All vehicles used in the transportation of explosives materials shall be equipped with two fire extinguishers rated at Class 2A 10B:C or higher. One fire extinguisher shall be mounted or placed inside the cab of the vehicle and one mounted outside the cab.

10.6.1.5.4 The UXOSO will have at least one portable fire extinguisher having a rating of not less than Class 4A Type 80B:C for use inside the Exclusion Zone.

10.6.1.5.5 Flammable/Combustible liquid storage areas will have at least one Class 4A Type 80B:C fire extinguisher located within 75 feet, but not less than 20 feet of the storage area. The site office and support locations shall be equipped with a fire extinguisher rated at 1A 10B:C or higher according to the NFPA 10 and HI fire code.

10.7 Spill Containment

There will be no large volume storage of fuels and oils at the project site; therefore, the probability of a spill is unlikely. However, the UXOSO will maintain and issue materials and equipment capable of containment and recovery of any spilled materials. Spill control materials and equipment will be staged at any location where fuel transfer will take place. Refer to appropriate Activity Hazard Analyses. In the event of a spill, the following procedures should be applied:

1. Notify the UXOSO and SUXOS immediately.
2. The SUXOS will notify the USACE OE Safety Specialist. The following relative information (location, time, chemical identity, quantity, and MSDSs), and any corrective actions/measures taken will be passed.
3. Locate the source and stop the leak/spill if it can be done, as dictated by the UXOSO.
4. Begin containment and recovery of spilled material, as directed by the UXOSO, using appropriate PPE and spill clean-up equipment and materials.

Section 11 Emergency Response

11.1 Purpose

11.1.1 This section provides an overview of the emergency procedures that may be implemented for Waikoloa Maneuver Area Remediation Project. Typical emergency situations could include medical emergencies, range fire, vehicle accident, unintentional detonation, inclement weather, for example. Typically, any situation where there are life threatening or potential life threatening conditions is considered an emergency.

11.2 Project Emergency Coordinator

11.2.1 The UXO Safety Officer (UXOSO/SSHO) will act as the emergency coordinator and will implement this contingency plan in the event of an explosion, fire, medical emergencies, or whenever conditions warrant such action. The UXO Safety Officer will be responsible for ensuring emergency treatment and emergency transport of personnel as necessary. Emergency drills will be conducted once a month and shall be evaluated and recorded using the emergency response evaluation checklist.

11.2.2 Emergency Services

11.2.2.1 A tested system shall exist for the implementation of emergency services. The UXO Safety Officer will verify daily that Team Supervisor cell phones properly function, that Team Supervisor radio communications properly function, and that all personnel are familiar with emergency procedures prior to commencing work.

11.2.2.2 Medical services, if required, will take place at North Hawaii Community Hospital. Transport to the hospital will be by most expeditious manner depending upon location and severity of victim. All medical service on the project shall be in accordance with EM 385-1-1, Section 3, and 29 CFR 1910.151 requirements.

11.2.2.3 In the event of an emergency requiring medical evacuation from the field, the injured person shall either be brought by vehicle to the rally point and then by ambulance to North Hawaii Community Hospital Emergency Room or by helicopter via Medical Evacuation (MEDEVAC) to the hospital. The UXOSO shall notify the Emergency Room Charge Nurse or the Doctor as to the condition of the injured person as they are enroute to the Emergency Room.

11.3 Project Emergency Communications

11.3.1 Communications among all Clearance Teams, SUXOS, UXOSO and OPM will be by cell phone and if no reception is available due to location then by radio. Communications shall be tested daily prior to the commencement of work.

11.4 Emergency Phone Numbers

11.4.1 A current list of emergency phone numbers can be found in Table 10-1 or Appendix C of the PWP. A copy will also be given to each employee, and will be posted at the shop and office near telephones, common areas, and in each vehicle.

11.5 Helicopter Medical Evacuation Procedures

Landing Zone (LZ) Requirements

Minimum sixty (60) foot diameter landing area
Relatively level ground without brush, trees, and large protruding rocks.
Maximum 4 degrees slope.
Helicopter radio frequencies: 127.05 normal cruise 122.9 at non-towered airports, i.e. Waimea

Equipment Requirements:

Signal mirror
Fluorescent Orange vest
Hand signal flags
Double hearing protection for LZ Monitor
Safety Glasses

Ideal Sequence of Events:

1. Team Supervisor contacts UXOSO via cell phone or radio and provides injury report:
    a. Who, What, When, Where, How and Severity of injuries
    b. What first aid procedures are completed or on going
    c. Requests Helicopter MEDEVAC support
2. UXOSO contacts 911 Emergency Dispatch to request MEDEVAC support and repeats details of incident and location of victim
3. Team Supervisor designates area to be Landing Zone for helicopter.
4. Team Supervisor directs all team members to remove and secure hats.
5. Team Supervisor designates one team member to be LZ Monitor.
6. LZ Monitor responsibilities:
    a. visually locate helicopter,
    b. use signal flags when helicopter is within landing range
    c. stand with back to the wind and face helicopter as it lands
    d. assists on landing by using hand signal flags to designate LZ location
7. Do not approach helicopter until eye contact with and signaled by pilot. Always approach the helicopter from front at 45 degree angle.
8. Assist medical support crew as required.
9. Once victim is loaded into helicopter all team members retreat toward the front of the helicopter to a safe location away from the LZ.
10. LZ Monitor looks over entire LZ to ensure all people are clear of area.
11. LZ Monitor signals all clear to pilot for takeoff. Be aware of flying debris and loud noise as the helicopter departs.
12. Team Supervisor secures the accident scene for investigation and remains nearby with team members.

Precautions:

-Do not approach from rear of helicopter. **Beware of the tail rotor**.

-Do not approach helicopter from up slope. The main rotor blades are lower to the earth.

-After eye contact with the pilot and his approval, approach helicopter from down slope side at 45 degrees relative to the front of the helicopter.

-The medical personnel aboard the aircraft are in charge of the loading of the victim. Team members will assist as directed by the medical personnel.

-Depending upon distance from victim to LZ, pilot may opt to shut down the helicopter. All personnel shall remain clear of the LZ during helicopter restart.

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Section 12 Confined Space Entry

The contractor does not anticipate confined space entry activities under this Task Order; therefore, the requirement of this Section does not apply.
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Section 13 Logs, Reports, and Record Keeping

13.1 Record Keeping

13.1.1 Record keeping procedures for training logs, daily safety inspection logs, employee/visitor registers, medical surveillance records and certifications, air monitoring results, and personal exposure records are specified.

13.1.1.1 All personal exposure and medical monitoring records will be maintained in accordance with applicable OSHA standards, CFR 1904, 1910, and 1926.

13.1.1.2 The contractor will develop, retain, and submit, as part of the final report, all visitor registration logs, training logs, and daily safety inspection logs (as part of the daily QC Reports).

13.1.1.3 Should any unforeseen hazard become evident during the performance of work, the UXOSO shall bring such hazard information to the attention of the OPM and the USACE OE Safety Specialist (both verbally and in writing) for resolution as soon as possible. In the interim, necessary action shall be taken to reestablish and maintain safe working conditions.

13.1.1.4 A Documentation of Training Form (See Appendix F of the PWP) will be prepared for the daily Pre-operations Safety Briefing, as well as for any additional safety training performed on-site. This form will include the following information:

- date of training; nature of training (time conducted, subjects covered, and by whom);
- morning Pre-operations Safety Briefing (time conducted, subjects covered, and by whom);
- visitor training (time conducted, subjects covered, and by whom); and
- signature of the SUXOS and UXOSO indicating concurrence.

13.1.2 Logs

13.1.2.1 The Safety Log and records will be completed and retained by the UXOSO and OM for the duration of the project. At the close of the project, they will be turned over to the Project Manager as part of the official project file.

13.1.3 Safety Log

13.1.3.1 The UXOSO will maintain a daily safety log of all safety related activities. When safety and health deficiencies are noted during daily inspections, the measures, timetable, and individual responsible for correcting the deficiencies will be noted in

the safety log. The UXOSO will also annotate the log when deficiencies have been corrected.

13.1.3.2 The following information will be addressed at a minimum in the daily Safety Log:

- date and recorder of log;
- significant site events relating to safety;
- accidents;
- stop work actions due to safety;
- safety audits/deficiencies noted/corrective actions;
- signature of the UXOSO;
- training logs;
- a record of all individual training qualifications, of on-site personnel, will be maintained on-site; and
- records of Site-specific Training, Visitor Training, and Daily Safety Briefings will be prepared on a Document of Training Form, (See Appendix F of the PWP), and retained in the project files.

13.1.4 Equipment Maintenance Logs

13.1.4.1 Records of maintenance for equipment used on-site will be performed and maintained as part of the project files.

13.1.5 Employee/Visitor Registration Records

13.1.5.1 A record of all employees and visitors coming onto the site will be recorded on the "Visitor's Log" (See Appendix F of the PWP) and retained in the project files.

13.1.6 Environmental and Personal Exposure Monitoring

13.1.6.1 The PWS for this project includes performing MEC Removal Action at the Waikoloa Maneuver Area.

13.1.6.2 The site characteristic of this site reflects no anticipated toxic, chemical, or radiological hazards. No toxic, chemical, or radiological hazards are expected during activities under the PWS. The requirements for this section are not required.

13.1.7 Reports

13.1.8 Safety Exposure Report

13.1.8.1 The Safety Exposure Report, a tabulation of field labor hours, lost workday accidents, and number of lost workdays shall be submitted monthly in accordance

with DID MR-080. The following safety reports will be submitted as required by applicable USACE and OSHA regulations:

- Medical Monitoring Records of employee(s) obtained after site investigations begin.
- Accident Investigation Report (ENG Form 3394). See Appendix F of the PWP.
- When a reportable injury/illness/accident occurs at the job site, the Accident Investigation Report Form (ENG Form 3394) will be completed and forwarded within 2 working days to the OESS who will forward to POH.
- If a near miss occurs, the accident form will be completed and retained for the record. The OPM will inform the POH PM of any accidents.
- If an OSHA reportable accident occurs, the On Site Project Manager will report all required information to the POH PM within 8 hours.

13.1.9 Monthly Accident Report

13.1.9.1 The Program Manager will report project accident information to the POH Contracting Officer in accordance with DID MR-015 and EM 385-1-1. If there is an accident involving radiation, the Radiation Protection Officer for the USACE Geographic District or the Radiation Protection Staff Officer shall be notified. This report will be provided no later than 10 calendar days following the last day of the reporting month.

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Attachment A (D-1-A)

Heavy Equipment SOP and Checklists

Environet, Inc.

Standard Operating Procedures

HEAVY EQUIPMENT

I. Introduction

Improper procedures used by Environet employees can cause injury, disability, or death. By outlining the following safe operating procedures for use of heavy equipment we can learn to minimize risk, prevent injury, and safeguard ourselves and our co-workers.

II. Purpose

To reduce the risk of a work-related injury or death by maximizing personal safety during Heavy Equipment operations.

III. Goal

To ensure all employees know and understand the safe operating procedures pertaining to the use of Heavy Equipment.

IV. PROCEDURES: GENERAL

These Safe Operating Procedures shall apply to, but not be limited to, the following equipment:

1. Forklifts
2. Tractors
3. Backhoes
4. Excavators

A. Only trained and authorized operators shall be permitted to operate the designated equipment.

B. Personal Protective Equipment is mandatory and may include the following (refer to the related Activity Hazard Analysis for specific PPE):
   - Steel-toe or composite toe boots
   - Eye protection
   - Hard hat
   - Hearing protection
   - Gloves

C. Pre-Start / Walk-Around Inspection
   - Complete Startup Checklist for the specific piece of equipment to be used. EACH operator who uses a piece of equipment in a shift must complete their own Startup Checklist.
   - NOTE: Open radiator cap ONLY when engine is cooled.

- NOTE: Use protective barrier when checking hydraulic lines and connections for leaks. Hydraulic fluid escaping under pressure may penetrate skin and/or cause serious bodily harm.

D. Machine Maintenance-End of Use
- Ensure cab area is clean and free of debris and tools.
- Clean windshields, mirrors, lights.
- Remove all oils, grease, and mud from grab rails, handles and steps.
- Remove any personal items and secure any loose equipment-related items.

E. Work Site
- Perform necessary utility investigations prior to any digging operation.
  - Call 811 to determine underground utility locations.
  - For operations involving close proximity to overhead utilities, use a spotter to help determine the safe range of motion for the equipment. The spotter MUST STAY IN THE AREA, in clear view of the operator and the utilities, during all operations, to ensure no contact is made.
- Know the work space required by the machine and ensure no obstructions, interferences, drop-offs, or personnel are within the work space.

F. Mounting equipment
- NEVER GET ON OR OFF A MACHINE THAT IS IN MOTION.
- Maintain 3-point contact with steps and handrails while getting onto a machine- DO NOT use controls or steering devices as a handhold.
- Do not operate any machinery with wet, greasy, or muddy hands.

G. Starting/Operating the Equipment
- EXHAUST FUMES ARE DANGEROUS- Always run equipment in a well-ventilated area.
- Fasten seat belt and adjust properly prior to starting
- Controls should be in neutral and the parking brake should be set prior to starting the engine.
- Only start the engine from the operator's seat.
- Warn area personnel that you are starting the engine.
- Check all gauges, lights, instruments and warning devices to assure that they are functioning properly and the readings are within normal range.
- Test steering, right and left.
- Test brakes against ground speed to ensure proper function.
- Ensure all controls are working properly.

H. Machine Operation
- SMOKING IS PROHIBITED AT ALL TIMES WHILE OPERATING MACHINERY.
- Only the operator is permitted to ride on the machine.
- When backing up, use extra care and sound the horn to clear the area. ALWAYS USE A SPOTTER/GROUND GUIDE.
- If ANY malfunction is observed, DO NOT OPERATE until the proper repairs have been made AND DOCUMENTED.

- Drive at speeds appropriate to the working conditions.
- Do NOT coast downhill. Use gearing that will prevent excessive speed going downhill. Do not park on an incline.
- Know your stopping distances at working speeds.
- Do not permit any personnel to stand or pass under a bucket or lift arms.
- Strictly adhere to manufacturers load limits. Know them prior to operation.
- If the equipment gets stuck, contact Safety and get assistance.
- Do not make mechanical adjustments while the equipment is in motion.
- NEVER exceed manufacturer's recommendations for pulling, lifting or towing.
- Release all stored energy, i.e. engine off, hydraulic cylinders retracted, before dismounting a machine.

I. Operating a PTO
- Turn off the engine and wait until the PTO stops before dismounting, disconnecting, or servicing the PTO unit.
- Wear snug fitting clothing when operating the PTO, or near other rotating equipment.
- When operating stationary PTO equipment, always apply the parking brake and chock the rear wheels to prevent any unnecessary movement.
- PTO shields are mandatory on all PTO-driven equipment.

J. Refueling
- Turn off and cool the engine and any electrical systems before refueling.
- Ensure the fueling area is well ventilated.
- Do NOT smoke while refueling. Keep open flames and sparks away from the area.
- Ground the funnel or fuel nozzle against the filler neck to avoid sparks while refueling.
- Do not use gasoline or diesel for cleaning parts.
- Check battery and electrolyte levels per manufacturers recommendations.
- Know where fire extinguishers are located.

K. Shut Down/Parking
- Park on level ground
- Set the parking brake and chock the wheels
- Lower all hydraulic implements to their lowest position possible.

Tractor: JOHN DEERE 110, BACKHOE

Hours:

Operator:

Week End:

ENGINE	GOOD	NoGo
Oil Level		
Coolant		
Coolant Hoses		
Fuel/Water Separator		
Air PreCleaner		
Dust Unloader Valve		
Air Filter Indicator		
Air (Drain Valve Opened)		
Batteries		
Belts		
Coolers		
Wiper Fluid		

TRANSMISSION		
Oil Level		
Gear Box/Drive/ Differential Leaks		
HYDRAULICS		
Oil Level		
Leaks		
Hose Condition		

MISCELLANEOUS		
Daily Grease		
Bucket and Blade Linkage		
Tires		
Glass		
Operator Compartment Clean		
Wipers		
Operators Manual		
Spill Kit		

SAFETY	GOOD	NoGo
Warning Devices		
Brakes		
Parking Brake		
Steering		
Lockout Controls		
Lights		
Fier Extinguisher		
Seat Belt		
Mirrors		
Doors and Latches		
Couplers/Locking Mechanisms		
Steps and Platforms		
Safety Signage		
Boom Joint Locks		

Comments:

Operator Date

Supervisor Date

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Operator:_____ Date:_____

Equipment: GEHL 663 Fork lift	Hours:_____

DAILY	GO	NG	N/A	COMMENTS
Operator Manual Present				
Fuel Tank Level				
Fuel Pump Filter				
Air Cleaner (if heavy dust area)				
Engine Oil Level				
Radiator Coolant Level				
Hydraulic Oil Level				
Grease Fittings Lubed				OP Manual Pg 37-39
Tires				

WEEKLY

Air Cleaner (if light dust area)				
Battery Level and Connections				
Grease Fittings				OP Manual Pg 37-40
Fuel Filter				
Wheel Nuts				Torque= 30 ft-lbs.
Transmission Oil Level				
Parking Brake				
Boom Alignment Pads				
Boom Chains (lube)				80-90 WT Oil
Brake Reservoir				

Signature _____

Additional Comments:

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Environet, Inc.

Tractor: Montana 4540 Hours: _____

Operator: Week End: _____

TRACTOR PRE-OPERATIONAL CHECKS	GOOD	NG	Date				
Transmission Fluid Level							
Engine Oil Level							
Operating Lights							
Seat Belt							
Water Separator							
Air Cleaner Evacuator Valve							
Clean Grill and Radiator Screen							
Coolant Level							
Intercooler Screen							
Tires							
Belts							
Hoses							
Exterior							
Brake and Clutch (pedal travel, noise, function)							
Parking Brake							
Horn/Back-Up Alarm							
Steering							
Gauges/Indicator Lights							
Gear Selector							
Fire Extinguisher (Present, Pin, Sealed, Gauge Green)							
Fuel							

MOWER PRE-OPERATIONAL CHECKS	GOOD	NG					
Chain Guards							
Trailing Wheel							
PTO Drive Shaft							
Safety Pins in Place							
Blade Condition							

Operator/Inspector						

SUXOS Signature: _____

Attachment B (D-1-B)

Hazard Communications Program

HAZARD COMMUNICATIONS PROGRAM

TABLE OF CONTENTS

B. Re-assigned/Transferred Employees

C. New Hires

D. New Hazards

X. Non-Routine Work

XI. Contractors

XII. Audit

Appendices

A. Inventory of Chemicals
B. Map: Locations of Chemical Hazards, Spill Kits and MSDS

I. INTRODUCTION

As part of Environet's overall safety and health program, a chemical hazard communication program has been established. The Hazard Communication (HAZCOM) Program is designed to comply with the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard and the USACE EM 3851-1 Health & Safety manual. This specific HAZCOM plan applies only to the Environet office and shop location in Kamuela and all field sites on the Waikoloa Maneuver Area Project, HI.

II. OBJECTIVE

The objective of the Hazard Communication Program is to prevent occupational injuries and illnesses related to chemical exposure by educating employees about workplace chemical hazards.

III. SCOPE

The HAZCOM Program applies to all work areas where hazardous chemicals are known to be present both under normal conditions and in a foreseeable emergency. The Site Safety & Health officer (SSHO) assigned to the Big Island locations, has the responsibility for overall coordination of the Hazard Communication Program. The SSHO also has the responsibility to administer and implement the program at the office/shop location and the Waikoloa Maneuver Area (WMA) project sites.

The Hazard Communication Program has four major components:

— Container labeling and other forms of warning;

— Material Safety Data Sheets (MSDS's);

— Employee education and training;

— Written program and chemical inventory

IV. HAZARDOUS CHEMICALS

The definition of "hazardous chemicals" as given by OSHA is "any chemical which is a physical hazard or health hazard".

Physical hazard characteristics include substances which are:

— combustible,

— compressed gases,

— explosive,

— flammable,

— organic peroxides,

— oxidizers.

— pyrophoric, and

— unstable (reactive) or water reactive

Chemical health hazards include substances which are:

— toxic or highly toxic,

— irritants,

— sensitizers,

— carcinogens, and those with

— target organ effect

Further explanation can be found in Appendix A of the Hazard Communication Standard 29 CFR 1910.1200.

V. HAZARD COMMUNICATION PROGRAM

This written Hazard Communication Program outlines and describes how the following information will be organized and transmitted:

A. List of hazardous chemicals known to be present in the workplace.

B. Information on precautionary labels and other forms of warning for known hazardous chemicals in the workplace.

C. Material Safety Data Sheets (MSDSs) for known hazardous chemicals in the workplace.

D. Methods used to provide employee information and training.

E. Methods used to inform employees of hazards of non-routine work.

F. Methods used to inform contractor employers of any hazardous chemicals to which contractor employees may be exposed.

Guidance for developing and maintaining the written program is provided by the Corporate Safety Manager.

The Hazard Communication Program is available for review by all employees upon request to their supervisor and is also located in the shop next to the Material Safety (Data Sheet) MSDS notebook.

VI. CHEMICAL INVENTORY LIST

The Shop Supervisor has the responsibility to maintain an inventory list of known chemicals in the workplace. Any changes to the inventory list should be approved by the SSHO.

The chemical inventory list is available to employees during their work shift and is located in their work area. Refer to MSDS section for specific location(s).

Employees who have questions about the chemical inventory list should contact their immediate supervisor.

See Appendix A for the Chemical Inventory List which includes the location of each item and an explanation of how each will be used on site.

See Appendix B for a map of the hazardous chemical storage, spill kit, fire extinguisher, eye & body wash station, and HAZCOM & MSDS locations.

VII. PRECAUTIONARY LABELING

A. Containers in the Workplace

The Shop Supervisor and field team leaders have the responsibility to insure all known hazardous chemicals present in their areas of responsibility display, in English, a precautionary label stating:

— Identity of the hazardous chemical(s)

— Appropriate hazard warning(s)

In the event of an improperly labeled hazardous chemical container, a proper label will be requested, by telephone and letter from the chemical supplier. Failure of a supplier to correct labeling deficiencies within 60 days will result in suspension of use of the affected product.

All labels on incoming chemicals must not be defaced in any way. Observation or other detection of defaced labels must be immediately reported to supervision so appropriate labels can be applied.

B. Portable Containers

All portable containers of hazardous chemicals require labeling. The exception to this policy is that portable containers of hazardous chemicals do not have to be labeled if they contain chemicals transferred from a labeled container, and are intended only for the immediate use by and remain the in the constant control of the employee who performs the transfer. All other portable containers and usage will require labeling. Employees who have questions about portable container labeling should contact their immediate supervisor. The employee who uses the portable container is responsible for placing the label on the container, and the Department Manager/Supervisor is responsible to see that labeling is done.

C. Product Containers Leaving the Workplace

All hazardous chemical containers that are shipped shall be labeled and shall include the following information:

— Identity of the hazardous chemical(s);

— Appropriate hazard warning(s); and

— Name and address of the chemical manufacturer or other responsible party.

Special information on labels, tags or other markings will be consistent with the information contained on the Material Safety Data Sheet and similar information suggested in the American National Standard Institute (ANSI) Precautionary Labeling Standard (Z129.1-1982).

The Shop Supervisor is responsible for coordinating the labeling program for containers leaving the workplace. The Shop Supervisor is responsible for administering the program at the shop and storage areas.

G. Update and Review

The Corporate Safety Manager is responsible for reviewing the labeling system annually and updating if necessary. Changes in the labeling system will be transmitted to affected supervisors and employees.

Employees who have questions about the precautionary labeling system should contact their immediate supervisor.

VIII. MATERIAL SAFETY DATA SHEETS (MSDS'S)

A. MSDS Format

MSDS's are written or printed material concerning product hazard determination, which are prepared and distributed with chemicals by chemical manufacturers and distributors. MSDS's are written in English and contain the following information:

— Identity of the chemical as provided on the container label;

— Physical and chemical characteristics of the material;

— Physical hazards of the material;

— Health hazards of the material;

— Primary route(s) of entry;

— Exposure limits, Threshold Limit Value (TLV), OSHA Permissible Exposure Limit (PEL), or Supplier recommended limits;

— Whether or not the material or components have been found to be a potential carcinogen by the International Agency for Research on Cancer (IARC), National Toxicology Program (NTP), or by OSHA;

— Applicable precautions for safe handling and use;

— Applicable control measures;

— Emergency and first-aid procedures;

— Date of preparation or date of last change;

— Name, address and telephone number of the chemical manufacturer, importer, employer or other responsible party, who can provide additional information.

B. Obtaining MSDS's

On all Purchase Requisitions for any chemicals, the Shop Supervisor will verify: "MSDS on file," or "MSDS required," or "material exempt." The SSHO will review determinations periodically and randomly for compliance.

The Shop Supervisor is responsible for obtaining MSDS's for the company. A MSDS should be available for every hazardous chemical listed on the inventory list.

In the event a MSDS is not available, the Shop Supervisor will use the following procedures to obtain MSDS's:

1. The supplier will be contacted by telephone and letter, and all correspondence and communication documented as proof of effort to comply.

2. If a supplier should not satisfy the first written request within 30 days, a second written request for a MSDS should be sent to the supplier and the Department of Labor will be contacted if MSDS is not received within 15 days.

3. All requests to suppliers and the Department of Labor including letters and telephone calls must be documented and maintained on file.

C. Review of MSDS's

The SSHO is responsible for reviewing all incoming data sheets for new and significant health/safety information. Any new information will be transmitted to the Senior UXO Supervisor and Project Manager so appropriate measures can be taken to inform affected employees.

If deficiencies exist or additional information is needed concerning MSDS's, the chemical manufacturer or supplier will be contacted to obtain necessary information.

D. MSDS Maintenance

The Shop Supervisor is responsible for maintaining the MSDS's.

The MSDS's for chemicals and the chemical inventory list are maintained by supervisors in a notebook titled "Hazard Communication Program & MSDS". These are accessible to employees during each work shift and will be taken along with Activity Hazard Analyses (AHA's) to the field when needed. Notebook locations can be found in Appendix B.

If MSDS's are not available or new chemicals in use do not have MSDS's, employees should not utilize the chemicals and contact their immediate supervisor.

A master copy of the MSDS's and inventory list will be maintained by the Shop Supervisor. The SSHO review the documents and save a back-up file on the server at least every quarter.

E. By-Products

Where hazardous materials are generated as by-products of operations, an MSDS will be provided in the appropriate MSDS files. No by-products are expected.

F. New/Trial Chemicals

The SSHO must approve all new/trial chemicals before use by employees. A MSDS must be reviewed before the chemical is used. A new chemical purchase request should be and sent to the Shop Supervisor who will seek approval by the SSHO prior to employee use of a new chemical.

G. Hazard Determination

Manufactured products are evaluated to determine if hazardous material exposure may occur to downstream users, as defined by the Hazard Communication Standard. Where such exposure exists MSDS's will be provided to the users.

The SSHO relies upon the hazard determination and Material Safety Data Sheet supplied by the chemical manufacturer or distributor to determine the hazards of all chemicals bought, used or stored in the facility.

The SSHO will evaluate the hazards of consumer products in consultation with the Corporate Safety Manager (CSP or CIH).

Employees who have questions about Material Safety Data Sheets should contact their immediate supervisor.

IX. EMPLOYEE TRAINING AND EDUCATION

Effective employee training and education is the most critical component of the hazard communication program. A properly conducted training program will insure that employees are aware of hazards in the workplace and appropriate control measures to protect them.

The SSHO coordinates the employee training and education program for the facility.

A. Program Outline

All employees who work in areas where hazardous chemicals are used and/or maintained and those who may be exposed in an emergency are involved in the employee training and educational program. The program is presented in two phases:

(1) General Information Training

— Explanation of the Hazard Communication Standard;

— Location and availability of written hazard communication program;

— Operations in the work area where hazardous chemicals are present;

— General introduction of chemical hazards, labeling and Material Safety Data Sheet (MSDS's)

— Each employee will receive a handout describing how they can work safely with chemical hazards.

General information training is administered by the SSHO during the initial orientation.

(2) Specific Hazard Training

— Location of hazardous chemicals in the work area;

— Discussion of methods and means of determining/detecting the presence/ release of hazardous chemicals in the work area;

— The chemical physical and health hazards in the work area;

— Explanation of internal labeling system;

— Hazards associated with piping systems;

— Review of appropriate work practices, personal protective equipment and emergency procedures;

— Access to safety and health information;

— Work area list of hazardous chemicals and Material Safety Data Sheets;

— How to obtain additional information.

Specific hazard training is administered by the immediate supervisor. As a training aid, the following material is used:

— Audio-visual presentation: Orientation Program

— Written material: Chemical Safety Training Sheet

All employees who receive general information and specific hazard training sign a training sheet as documentation.

B. Re-Assigned/Transferred Employees

Employees Re-Assigned/Transferred to other work areas will undergo a review of specific hazard training in their new work area. The Senior UXO Supervisor is responsible for scheduling and insuring that this retraining session is conducted by the SSHO and immediate supervisor, and initiated on the first day of employment in a new work area. Employees will be required to sign a transfer safety training sheet.

C. New Hires

Whenever a person is hired for employment, hazard communication training and education will be provided at the time of their initial assignment.

New Employee training will be provided by the SSHO and immediate supervisor as part of new employee orientation at the time of initial employment and prior to handling hazardous chemicals.

New hires will sign an Employee Orientation Sheet.

D. New Hazard

There are three ways in which a new hazard may be introduced:

1. A new hazardous chemical may be brought into the workplace; or

2. A current hazardous chemical in use may expose additional employees in the same work area; or

3. A former non-hazardous chemical may begin to be used in a manner that is hazardous.

Whenever a new hazard is introduced, the SSHO is responsible for providing specific hazard training to all affected employees prior to the introduction of the hazard.

The Corporate Safety Manager can provide assistance and guidance with new hazard training. Employees will be required to sign a new chemical training sheet.

X. NON-ROUTINE WORK

Occasionally employees will be asked to perform non-routine work, which can be defined as work not normally performed by an employee during the normal course of job duties. Example of non- routine work could be, but not limited to:

— Confined space entry work;

— Painting or stripping;

— Building and structural repair;

— Welding and cutting operations;

— Thermal Treatment

The following procedures will be used when employees perform non- routine work:

A. The Senior UXO Supervisor will determine the need for non- routine work and the hazards associated with the work. The SSHO can provide assistance to determine the hazards involved.

B. The immediate supervisor and SSHO will train the employees performing the non-routine work of the hazards associated with the work and of procedures/permits to follow. The training should be given each time prior to employees performing non-routine work.

Employees share in the responsibility by ensuring their immediate supervisor knows that non-routine work will be performed.

The SSHO may require that special work permits be required for some non-routine work such as confined space entry, welding, cutting, and working in or near chemical dump sites. None of these hazards are expected on the Waikoloa Maneuver Area project.

Employees should contact their immediate supervisor with questions concerning non-routine work.

XI. CONTRACTORS

It is Environet's policy that when contractors are working on Environet property or contract field sites they must comply with all OSHA and EM 385-1-1 standards and requirements, where applicable. The Hazard Communication Standard requires all contractors working on company property to be informed by the SSHO concerning applicable workplace hazardous chemicals which the contractor's employees may be exposed to while performing their work and of appropriate protective measures. This information is provided so contractor employers can properly train their employees. In addition, the contractor will inform the SSHO about hazardous chemicals that the contractor brings onto Environet property so that precautions can be taken.

The following procedure is utilized with contractors, prior to the contractor's employees beginning work on Environet property.

A. Individual Project Managers and/or Supervisors

Responsibilities:

1. Include with the request for a quote for projects requiring on-site work by contractor employees, a general letter of notification that contractor employees may be exposed to hazardous materials.

2. Obtain along with the vendor's quotation and forward to the Contracts Manager and SSHO, a signed acknowledgement of contractor hazard notification.

3. Forward all requests for further hazard information to the SSHO.

4. Minimize exposure of contractor employees to hazardous materials.

B. Chemical Inventory

The SSHO will determine and list what hazardous chemicals the contractor's employees may be exposed to while performing their work.

C. Material Safety Data Sheets

The contractor employer will be provided with the list of hazardous chemicals the contractor's employees may be exposed to while performing their work and the availability of Material Safety Data Sheets, which list appropriate protective measures. A copy of the form signed by the contractor employer will be maintained by the contracts manager and the SSHO.

D. Contractor Supplied Chemical Inventory

The contractor employer will provide, in writing, a list of chemicals with Material Safety Data Sheets the contractor will bring onto the project site and/or shop/office property.

The Shop Supervisor and the SSHO will review the chemical list and MSDS's provided by the contractor and will notify the supervisor of the area where the contractor is working of the potential exposure and appropriate protective measures.

E. Documentation

All contacts with contractors concerning hazardous communication shall be documented and filed with the SSHO.

XII. AUDIT

A. Hazard Communication Program Annual Review

The Hazard Communication Program will be audited at least annually by the Corporate Safety Manager.

A report will be generated from the review audit and sent to the Project Manager, Division Manager and the SSHO.

B. Health Hazard Audits

The SSHO will utilize the Chemical Inventory List for auditing specific chemical hazards. The SSHO will report all findings to the Corporate Safety Manager and Project Manager. The Project Manager is responsible for following up to see that supervisors take corrective action concerning recommendations or deficiencies resulting from the audit. The SSHO will perform a follow-up inspection on each deficiencies and report findings.

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Appendix A- Chemical Inventory Sheet

Chemical Name	Chemical Type (solvent, paint, oil,)	Size (qt, L, gal)	Quantity	Expected Use	Location	MSDS on file? (ID #)
Diesel Fuel	Oil	5 gal	1	Used on the F-450 and tractors	Flam. Locker#1	24
Mixed Gas/Oil	Oil	5 gal	2	Used on weed eaters.	Flam. Locker#1	25
Gasoline	Oil	5 gal	1	Used on weed eaters.	Flam. Locker#1	25
Echo Premium Bar & Chain Oil	Oil	32 fl. Oz.	1	Used on weed eaters.	Flam. Locker#1	32
Stihl HP Super 2 Cycle Engine Oil	Oil	12.8 fl. Oz.	2	Used on weed eaters.	Flam. Locker#1	17
Maxi Power Multi-Ratio 2 Cycle Engine Oil	Oil	8 fl. Oz.	2	Used on weed eaters.	Flam. Locker#1	17
Stihl- Getriebefett fur Motorsensen und Frieschneider	Oil	80 ge	3	Used on weed eaters.	Flam. Locker#1	121
Do It Best 2 Cycle Engine Oil	Oil	32 fl. Oz.	6	Used on weed eaters.	Flam. Locker#1	122
Do It Best Bar and Chain Oil	Oil	32 fl. Oz.	3	Used on weed eaters.	Flam. Locker#1	123
Shindaiwa One 2 Cycle Engine Oil	Oil	2.6 fl. Oz.	6	Used on weed eaters.	Flam. Locker#1	124
Min Wax Wood Finish Stain Dark Walnut	Paint	8 fl. Oz.	1	Extra Paint from the building.	Flam. Locker#1	147
Min Wax Fast Drying Polyurethane	Solvent	8 fl. Oz,	1	Extra Paint from the building.	Flam. Locker#1	146

Chemical Name	Chemical Type (solvent, paint, oil,)	Size (qt, L, gal)	Quantity	Expected Use	Location	MSDS on file? (ID #)
Behr Concrete Stain 100% Acrylic	Paint	1 gal.	1	Extra Paint from the building.	Flam. Locker#1	128
Glidden Professional Fortis 350: Clam Shell	Paint	5 gal.	1	Extra Paint from the building.	Flam. Locker#1	148
Car Quest 50/50 Anti Freeze & Coolant	Solvent	1 gal.	1	Daily use. All trucks used daily.	Flam. Locker#2	13
Car Quest Power Steering Fluid	Solvent	1 qt.	9	Daily use. All trucks used daily.	Flam. Locker#2	42
Clorox	Solvent	96 fl. Oz.	5	Used for cleaning coolers and water jugs.	Flam. Locker#2	47
76 Super Synthetic Blend SAE 10W 30	Oil	1 gal.	1	Daily use. All trucks used daily.	Flam. Locker#2	48
Car Quest Carburator Cleaner Areosol Can	Solvent	12 Oz.	8	Daily use. All trucks used daily.	Flam. Locker#2	52
Car Quest All Season Motor Oil SAE 5W 20	Oil	1 qt.	10	Daily use. All trucks used daily.	Flam. Locker#2	65
Car Quest DOT 3 Heavy Duty Brake Fluid	Solvent	32 fl. Oz.	5	Daily use. All trucks used daily.	Flam. Locker#2	68
CVC Brake Kleen	Solvent	14 fl. Oz.	1	Daily use. All trucks used daily.	Flam. Locker#2	87
Prestone Anti Freeze Coolant	aerosol	1 gal.	2	Daily use. All trucks used daily.	Flam. Locker#2	100
Ace Purple Primer PVC	Solvent	4 fl. Oz.	1	Needed for damaged PVC pipes	Flam. Locker#2	102

Chemical Name	Chemical Type (solvent, paint, oil,)	Size (qt, L, gal)	Quantity	Expected Use	Location	MSDS on file? (ID #)
Ace Wet or Dry PVC Cement	Solvent	4 fl. Oz.	1	Needed for damaged PVC pipes	Flam. Locker#2	103
Car Quest Motor Oil All Season 5W 30	Oil	1 qt.	6	Daily use. All trucks used daily.	Flam. Locker#2	104
Cantex Conduit Solvent Cement	Solvent	32 fl. Oz.	1	Used around the shop.	Flam. Locker#2	127
Valspar Duramax Ext. Paint	Paint	1 gal.	1	Extra Paint from the building.	Flam. Locker#2	130
Valvoline Hydrolic Oil W760	Oil	5 gal.	1	Daily use. All trucks used daily.	Flam. Locker#2	132
Napa Batt. Term. Protector	Solvent	11.75 fl. Oz.	1	Daily use. All trucks used daily.	Flam. Locker#2	133
Napa Batt. Term. Cleaner	Solvent	13 fl. Oz.	1	Daily use. All trucks used daily.	Flam. Locker#2	134
Liquid Wrench-White Lithium Grease	Oil	10.25 fl. Oz.	1	Used around the shop.	Flam. Locker#3	1
WD 40	Solvent	8 Oz. Can	4	Daily use around the shop.	Flam. Locker#3	4
WD 40	Solvent	4 Oz. Can	1	Daily use around the shop.	Flam. Locker#3	4
Liquid Wrench-Dry Lube	Oil	11 Oz. Can	1	Used around the shop.	Flam. Locker#3	5
Rust Oleum- Stops Rust (Flat Black)	Oil	32 Oz.	1	Used around the shop.	Flam. Locker#3	14
Real Kill Wasp & Hornet Spray	Solvent	15 Oz. Can	2	Used out in the field.	Flam. Locker#3	15

Chemical Name	Chemical Type (solvent, paint, oil,)	Size (qt, L, gal)	Quantity	Expected Use	Location	MSDS on file? (ID #)
Total Kill Ortho Wasp & Hornet Killer	Solvent	15 Oz. Can	2	Used out in the field.	Flam. Locker#3	15
GB Liquid Tape	Solvent	roll	1	Used around the shop.	Flam. Locker#3	30
Car Quest no Seize Lubricant	Oil	8 fl. Oz.	1	Daily use. All trucks used daily.	Flam. Locker#3	36
Valvoline Gear Oil 85W-140	Oil	1 qt.	1	Daily use. All trucks used daily.	Flam. Locker#3	37
Dermatex Batt. Cleaner	Solvent	5.75 oz.can	2	Daily use. All trucks used daily.	Flam. Locker#3	40
Dermatex Batt. Protector & Sealer	Solvent	5 Oz	1	Daily use. All trucks used daily.	Flam. Locker#3	41
Car Quest General Purpose Lithium Grease	Oil	14 oz. cartridges	10	Daily use. All trucks used daily.	Flam. Locker#3	44/61
Valvoline Synthetic Gear Oil 75w-140	Oil	1 qt.	1	Daily use. All trucks used daily.	Flam. Locker#3	45
Car Quest Tractor Hydrolic Fluid	Oil	5 gal.	1	Used on the tractor.	Flam. Locker#3	62
Valvoline ATF +4	Oil	1 qt.	9	Daily use. All trucks used daily.	Flam. Locker#3	64
Car Quest – Mercon 5 ATF	Oil	1 qt.	5	Daily use. All trucks used daily.	Flam. Locker#3	66
Benjamin Moore Soft Gloss Acrylic House Paint	Paint	1 gal.	3	Extra Paint from the building.	Flam. Locker#3	80
Rustoleum Industrial Choice Water Base Paint: Flourecent Blue	Paint	17 Oz. Can	10	For marking or painting.	Flam. Locker#3	85

Chemical Name	Chemical Type (solvent, paint, oil,)	Size (qt, L, gal)	Quantity	Expected Use	Location	MSDS on file? (ID #)
Rustoleum Industrial Choice Water Base Paint : Flourecent Orange	Paint	17 Oz. Can	5	For marking or painting.	Flam. Locker#3	86
Ace Indoor/Outdoor Rust Stop	Paint	15 Oz. Can	1	Used around the shop.	Flam. Locker#3	90
Ace Machine & Impliment Rust Stop	Paint	15 Oz. Can	2	Used around the shop.	Flam. Locker#3	91
Liquid Wrench-Penetrating Oil	Oil	11 Oz. Can`	1	Used around the shop.	Flam. Locker#3	93
Benjamin Moore Paints: Orange	Paint	5 gal.	1	For marking or painting.	Flam. Locker#3	105
Rain X Original	Alcohol	7 fl. Oz.	2	Used to kill weeds at GPO and shop.	Flam. Locker#3	119
Camco- Extreme Blue Windshield Washer Fluid	Solvent	1 gal.	4	Trucks washed weekly.	Flam. Locker#3	120
Ace Paint Thinner	Solvent	120 fl. Oz.	1	Used for	Flam. Locker#3	125
Ace Rust Stop Oil Base Enamel Safety Yellow Gloss	Paint	1 gal.	1	Used as floor marker.	Flam. Locker#3	126
Car Quest Octain Boost	Alcohol	12 fl. Oz.	2	Daily use. All trucks used daily.	Flam. Locker#3	129
Tack 2000 Spray Adhesive	Alcohol	10.5 fl. Oz.	1	Used at GPO and the shop.	Flam. Locker#3	136
Ortho- Weed B Gone	Alcohol	40 fl. Oz.	1	Used at GPO and the shop.	Flam. Locker#3	137

Chemical Name	Chemical Type (solvent, paint, oil,)	Size (qt, L, gal)	Quantity	Expected Use	Location	MSDS on file? (ID #)
Turtle Wax Concentrated Car Wash	Solvent	100 fl. Oz.	2	Trucks washed weekly.	Shop Locker	46
Clorox Regular Bleach	Alcohol	96 fl. Oz.	1	Coolers and water jugs cleaned weekly.	Shop Locker	47
Ace Glass Cleaner Ammonia Formula	Alcohol	32 fl. Oz.	2	Trucks washed weekly.	Shop Locker	59
Simple Green	Alcohol	24 fl. Oz.	2	Trucks washed weekly.	Shop Locker	77
Lysol Disinfectant: kills viruses, bacteria, mold and mildew	Alcohol	1-19 fl. Oz. 1-12 fl. Oz.	2	Used out in the field.	Shop Locker	78
Armor-All Ultra Shine Wash + Wax	Alcohol	100 fl. Oz.	1	Trucks washed weekly.	Shop Locker	81
Spray Disinfectant	Alcohol	10 fl. Oz.	1	Used to keep office clean.	Shop Locker	82
Raid Flying Insect Killer Formula 6	Alcohol	15 fl. Oz.	2	Used out in the field.	Shop Locker	84
Super Glue Gorilla	Alcohol	6.53 Oz.	1	Used to repair shoes and gloves at the shop.	Shop Locker	95
Gorilla Epoxy-Hardener	Alcohol	4 oz. Tube	2	Used to repair shoes and gloves at the shop.	Shop Locker	96
Gorilla Epoxy-Resin	Alcohol	3.8 oz. Tube	2	Used to repair shoes and gloves at the shop.	Shop Locker	97
Windex Glass Cleaner	Alcohol	32 fl. Oz.	3	Trucks washed weekly.	Shop Locker	98

Chemical Name	Chemical Type (solvent, paint, oil,)	Size (qt, L, gal)	Quantity	Expected Use	Location	MSDS on file? (ID #)
Zymol Cleaner Wax	Alcohol	16 fl. Oz.	1	Trucks washed weekly.	Shop Locker	99
Epoxy Putty Stick Plumbing	Alcohol	2 Oz.	1	Used for repairing PVC or plumbing.	Shop Locker	101
Gorilla Glue Stronger- Faster	Alcohol	2 fl. Oz.	2	Used to repair shoes and gloves at the shop.	Shop Locker	106
Quick Set Epoxy Ace	Alcohol	1.25 fl. Oz.	4	Used around the shop.	Shop Locker	108
Tite bond III Ultimate Wood Glue	Alcohol	8 fl. Oz.	1	Used around the shop.	Shop Locker	110
Liquid Nails Adhesive	Alcohol	1-10 fl. Oz. 1-4 fl. Oz.	2	Used to repair shoes at the shop.	Shop Locker	115
Brasso	Solvent	8 fl. Oz.	1	Trucks washed weekly.	Shop Locker	131
Megaiar's Natural Shine Protectant	Solvent	16 fl. Oz.	1	Trucks washed weekly.	Shop Locker	135
Germ-X Hand Sanitizer	Alcohol	40 fl. Oz.	1	Used to keep office clean.	Shop Locker	140
Pledge Clean & Dust	Alcohol	17.7 fl. Oz.	1	Used to keep office clean.	Shop Locker	142
Zep Carpet Spot Cleaner	Solvent	24 fl. Oz.	1	Used to keep office clean.	Shop Locker	143
3M Photo Mount	Alcohol	1.5 fl. Oz.	2	Used as photo mount.	Shop Locker	145

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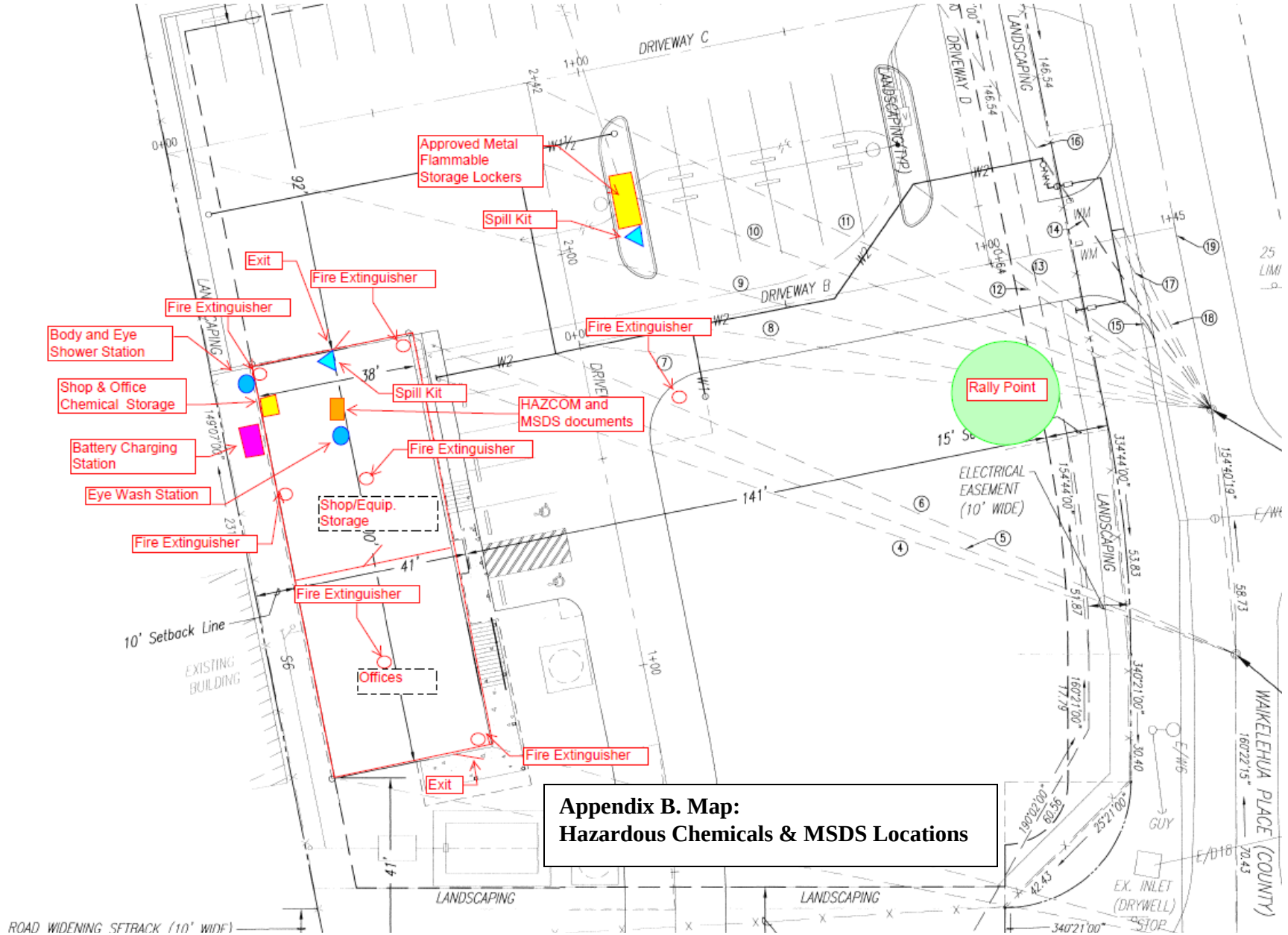

Appendix B. Map:
Hazardous Chemicals & MSDS Locations