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FINAL DRAFT SITE HEALTH AND SAFETY PLAN FOR MUNITIONS RESPONSE PROGRAM
EXPANDED SITE INSPECTION FOR FLEMING KEY DREDGE SPOIL AREA (DRAFT ACTING
AS FINAL) NAS KEY WEST FL
12/4/2012
RESOLUTION CONSULTANTS

Cover Page

**Final Draft
SITE HEALTH AND SAFETY PLAN
4-December-2012**

for

**Munitions Response Program
Expanded Site Inspection
Fleming Key Dredge Spoil Area
Naval Air Station Key West
Key West, Florida**

Prepared for:



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**Contract Number: N62470-11-D-8013
CTO JM20**

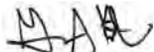
December 2012

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SITE HEALTH AND SAFETY PLAN

This Site Health and Safety Plan (HASP) was prepared for employees performing a specific, limited scope of work. It was prepared based on the best available information regarding the physical and chemical hazards known or suspected to be present on the project site. While it is not possible to discover, evaluate, and protect in advance against all possible hazards that may be encountered during the completion of this project, adherence to the requirements of the HASP will significantly reduce the potential for occupational injury. By signing below, I acknowledge that I have reviewed and hereby approve the HASP for the NAS Key West Dredge Spoil Area site. This HASP has been written for the exclusive use of Resolution Consultants, AECOM, EnSafe, their employees, and subcontractors. The plan is written for specified site conditions, dates, and personnel, and must be amended if these conditions change.

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Contents

SITE HEALTH AND SAFETY PLAN	ii
Executive Summary	viii
Acronyms and Abbreviations	x
1.0 INTRODUCTION	1-1
1.1 General.....	1-1
1.2 Project Policy Statement.....	1-1
1.3 References	1-1
2.0 SITE INFORMATION AND SCOPE OF WORK	2-1
2.1 Site Information	2-1
2.1.1 General Description	2-1
2.1.2 Site Background/History	2-1
2.1.3 Previous Investigation.....	2-2
2.2 Scope of Work.....	2-2
2.2.1 Mobilization/Demobilization	2-2
2.2.2 Land Surveying.....	2-3
2.2.3 Vegetation Removal	2-3
2.2.4 Digital Geophysical Mapping.....	2-3
2.2.5 Utility Clearance.....	2-3
2.2.6 Anomaly Avoidance	2-3
2.2.7 Additional Work Operations.....	2-4
3.0 HAZARD ASSESSMENT (SAFETY)	3-1
3.1 Physical Hazards	3-1
3.1.1 Slips, Trips, Falls, and Protruding Objects.....	3-1
3.1.2 Housekeeping	3-1
3.1.3 Manual Lifting.....	3-1
3.1.4 Utilities	3-1
3.1.5 Noise Exposure Monitoring	3-1
3.2 Biological Hazards	3-1
3.2.1 Small Mammals	3-1
3.2.2 Venomous Animals.....	3-2
3.2.3 Poisonous Plants	3-2
3.2.4 Insects	3-3
3.3 Ultraviolet Hazards.....	3-3
3.4 Weather Hazards	3-3
3.5 MEC Hazards and Anomaly Avoidance.....	3-4
3.5.1 Safety Warnings.....	3-4
3.6 Hazard Analysis	3-5
3.7 Task Specific SH&E Procedures.....	3-5
4.0 SH&E REQUIREMENTS (SAFETY)	4-1
4.1 HAZWOPER Qualifications	4-1
4.2 Site-Specific Safety Training	4-1
4.2.1 Competent Person Training Requirements	4-1
4.3 Tailgate Meetings.....	4-1
4.4 Hazard Communication	4-2
4.5 Confined Space Entry	4-2
4.6 Hazardous, Solid, or Municipal Waste	4-2

4.7	General Safety Rules.....	4-2
4.7.1	Housekeeping	4-2
4.7.2	Smoking, Eating, or Drinking	4-2
4.7.3	Personal Hygiene	4-2
4.7.4	Buddy System.....	4-3
4.8	Stop Work Authority	4-3
4.9	Client Specific Safety Requirements.....	4-3
5.0	EXPOSURE MONITORING PROCEDURES (HEALTH)	5-1
5.1	Contaminant Exposure Hazards	5-1
5.2	Heat and Cold Stress.....	5-1
5.2.1	Responding to Heat-Related Illness	5-1
6.0	ENVIRONMENTAL PROGRAM (ENVIRONMENT)	6-1
6.1	Environmental Compliance And Management	6-1
6.1.1	Air Emissions	6-1
6.1.2	Hazardous Waste Management	6-1
6.1.3	Storm Water Pollution Prevention	6-1
6.1.4	Wetlands Protection.....	6-1
6.1.5	Critical Habitat Protection	6-1
6.1.6	Environmental Protection	6-1
7.0	PERSONAL PROTECTIVE EQUIPMENT	7-1
7.1	Personal Protective Equipment	7-1
7.2	PPE Doffing and Donning (UTILIZATION) Information	7-1
7.3	Decontamination	7-2
7.3.1	General Requirements	7-2
7.3.2	Decontamination Equipment	7-2
7.3.3	Personal/Equipment Decontamination	7-2
8.0	PROJECT HEALTH AND SAFETY ORGANIZATION	8-1
8.1	Project Manager [Todd Haverkost]	8-1
8.2	Site Supervisor [SUXOS, TBD]	8-1
8.2.1	Responsibilities	8-1
8.2.2	Authority	8-1
8.2.3	Qualifications.....	8-1
8.3	Site Safety Officer [UXOSO, TBD]	8-1
8.3.1	Responsibilities	8-1
8.3.2	Authority	8-2
8.3.3	Qualifications.....	8-2
8.4	Employees.....	8-2
8.4.1	Employee Responsibilities	8-2
8.4.2	Employee Authority.....	8-2
8.5	Resolution Consultants Health and Safety Manager [John Knopf, CSP]	8-3
8.6	Subcontractors	8-3
8.7	Visitors.....	8-3
8.7.1	Visitor Access	8-4
9.0	SITE CONTROL	9-1
9.1	General.....	9-1
9.2	Controlled Work Areas.....	9-1
9.2.1	Exclusion Zone	9-1
9.2.2	Contamination Reduction Zone.....	9-2

9.2.3	Support Zone	9-2
9.3	Site Access Documentation.....	9-2
9.4	Site Security	9-2
10.0	EMERGENCY RESPONSE PLANNING	10-1
10.1	Emergency Action Plan	10-1
10.1.1	Emergency Coordinator.....	10-1
10.1.2	Site-Specific Emergency Procedures	10-2
10.1.3	Spill Containment Procedure.....	10-3
10.1.4	Safety Accident/Incident Reporting.....	10-3
10.1.5	Environmental Spill/Release Reporting	10-3
11.0	PERSONNEL ACKNOWLEDGEMENT	11-1

LIST OF TABLES

Table 3-1:	Hazardous Plant Identification Guide	3-2
Table 4-1:	Task Specific Competent Persons.....	4-1
Table 5-1:	Identification and Treatment of Heat-Related Illness	5-1
Table 7-1:	Personal Protective Equipment.....	7-1
Table 10-1:	Emergency Contacts	10-1
Table 10-2:	Emergency Planning	10-2

LIST OF FIGURES

Figure 9-1:	Typical Site Control Layout	9-3
Figure 10-1:	Emergency Occupational Hospital Route/Detail Map.....	10-4

LIST OF ATTACHMENTS

Attachment 1	Cross-Reference Table
Attachment 2	HASP Revision Table
Attachment 3	Task Hazard Analyses
Attachment 4	Applicable SH&E SOPs
Attachment 5	Daily Safety Meeting Form (SWAP)
Attachment 6	Contractor Significant Incident Report
Attachment 7	Material Safety Data Sheets
Attachment 8	State Spill Reporting Procedures

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Executive Summary

The purpose of this Site Health and Safety Plan (HASP) is to address health and safety concerns related to Resolution Consultants Expanded Site Inspection (SI) field activities at the Naval Air Station (NAS) Key West, located in Key West, Florida. The specific roles, responsibilities, authority, and requirements as they pertain to the safety of employees and the scope of services are discussed herein. The document is intended to identify known potential hazards and facilitate communication and control measures to prevent injury or harm. Additionally, provisions to control the potential for environmental impact from these activities are included where applicable.

Summary Table					
Resolution Consultants SOW		Resolution Consultants will manage the Expanded SI field activities that will include land surveying, vegetation removal, and digital geophysical mapping (DGM). Resolution Consultants UXO-qualified personnel will conduct MEC avoidance services in support of these field activities.			
Island Surveying, Inc. SOW		Subcontractor that will be providing land surveying services for the Expanded SI.			
UXO Biz, Inc. SOW		Subcontractor that will be providing vegetation removal services for the Expanded SI.			
NAEVA Geophysics SOW		Subcontractor that will be providing DGM services for the Expanded SI.			
Primary Physical Hazards					
x	Slips, Trips/Walking Surface	x	Munitions and Explosives of Concern (MEC) – Unexploded Ordnance (UXO)	x	Wildlife, Plants & Insects
x	Manual Lifting	x	Hand & Power Tools	x	Electrical Hazards
Chemical Hazards, Monitoring, Action Levels					
COC		Monitoring		Action Levels	
Not Applicable (NA)		NA		NA	

All staff are bound by the provisions of this HASP and are required to participate in a preliminary project safety meeting to familiarize them with the anticipated hazards and respective onsite controls. The discussion will cover the entire HASP subject matter, putting emphasis on critical elements of the plan; such as the emergency response procedures, personal protective equipment, site control strategies, and monitoring requirements. In addition, daily tailgate safety meetings will be held to discuss: the anticipated scope of work, required controls, identify new hazards and controls, incident reporting, review the results of inspections, any lessons learned or concerns from the previous day.

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Acronyms and Abbreviations

ANSI	American National Standards Institute
oC	Degrees Celsius
CFR	Code of Federal Regulations
CRZ	Contaminant Reduction Zone
CSP	Certified Safety Professional
dBA	Decibels on the A-weighted scale
DGM	Digital Geophysical Mapping
DOT	Department of Transportation
EAP	Emergency Action Plan
EC	Emergency Coordinator
ESS	Explosives Safety Submission
EZ	Exclusion Zone
FSP	Field Sampling Plan
GFCI	Ground Fault Circuit Interrupter
GPS	Global Positioning System
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
IDW	Investigative-Derived Waste
MC	Munitions Constituents
MEC	Munitions and Explosives of Concern
MPPEH	Material Potentially Presenting and Explosive Hazard
MRS	Munitions Response Site
MSDS	Material Safety Data Sheet
MUTCD	Manual of Uniform Traffic Control Devices
NAS	Naval Air Station
NCR	Nonconformance Report
NFA	No Further Action
NA	Not Applicable
NIOSH	National Institute for Occupational Safety and Health
NOSSA	Naval Ordnance Safety and Security Activity
NOSSAINST	NOSSA Instruction
OP	Operations Pamphlet
OSHA	Occupational Safety and Health Administration
PE	Performance Evaluation
PEL	Permissible Exposure Limit
PM	Project Manager
PPE	Personal Protective Equipment
PHSP	Programmatic Health and Safety Plan
RDX	cyclotrimethylenetrinitramine
SAP	Sampling & Analysis Plan
SH&E	Safety, Health, and Environmental
SI	Site Investigation
SOP	Standard Operating Procedure
SOW	Statement of Work
SUXOS	Senior UXO Supervisor
SZ	Support Zone
THA	Task Hazard Analysis
TNT	Trinitrotoluene
ug/l	Micrograms per liter
USCG	United States Coast Guard
USEPA	United States Environmental Protection Agency

UST	Underground Storage Tank
UXO	Unexploded Ordnance
UXOQCS	UXO Quality Control Specialist
UXOSO	UXO Safety Officer

1.0 INTRODUCTION

This project Health and Safety Plan (HASP) (including Attachments 1-8) provide a general description of the levels of personal protection and safe operating guidelines expected of each employee or subcontractor associated with the environmental services being conducted at the project site. This HASP also identifies chemical and physical hazards known to be associated with the Resolution Consultants-managed activities addressed in this document.

A cross-reference table is provided in **Attachment 1** which provides information concerning the corresponding elements between this HASP and the Accident Prevention Plan (APP) requirements of the United States Army Corps of Engineers (USACE) *Safety and Health Requirements Manual*, EM-385-1-1, 2008.

HASP Supplements will be generated as necessary to address any additional activities or changes in site conditions, which may occur during field operations. All Supplements or changes to the HASP must be approved by the Resolution Consultants Health and Safety Manager or designee, and will be documented in the Plan Revision Log (Attachment 2).

1.1 General

The provisions of this HASP are mandatory for all Resolution Consultants personnel (including both AECOM and EnSafe employees, as applicable) engaged in fieldwork associated with the environmental services being conducted at the subject site. For the purposes of this HASP, the term "Resolution Consultants" means an employee of any of the three firms. A copy of this HASP, any applicable HASP supplements shall be accessible on site and available for review at all times. Recordkeeping will be maintained in accordance with this HASP and the applicable Standard Operating Procedures (SOPs). In the event of a conflict between this HASP, the SOPs and federal, provincial, state, and local regulations, workers shall follow the most stringent/protective requirements. Concurrence with the provisions of this HASP is mandatory for all personnel at the site covered by this HASP and must be signed on the acknowledgement page.

1.2 Project Policy Statement

Resolution Consultants is committed to protecting the safety and health of our employees and meeting our obligations with respect to the protection of others affected by our activities. We are also committed to protecting and preserving the natural environment and communities in which we operate. The safety of persons and property is of vital importance to the success of this project and accident prevention measures shall be taken toward the avoidance of needless waste and loss. It shall be the policy of this project that all operations be conducted safely. Site supervisors are responsible for those they supervise by maintaining a safe and healthy working environment in their areas of responsibility, and by fairly and uniformly enforcing safety and health rules and requirements for all project personnel. Subcontractors shall comply with the requirements of this HASP, provisions contained within the contract document and all applicable rules, requirements and health, safety and environmental regulations. All practical measures shall be taken to promote safety and maintain a safe place to work. Subcontractors are wholly responsible for the prevention of accidents on work under their direction and shall be responsible for thorough safety and loss control programs and the execution of their own safety plans for the protection of workers.

1.3 References

This HASP conforms to the regulatory requirements and guidelines established in the following documents:

- Title 29, Part 1910 of the Code of Federal Regulations (29 CFR 1910), *Occupational Safety and Health Standards* (with special attention to Section 120, *Hazardous Waste Operations and Emergency Response*);

- Title 29, Part 1926 of the Code of Federal Regulations (29 CFR 1926), *Safety and Health Regulations for Construction*;
- National Institute for Occupational Safety and Health (NIOSH)/OSHA/U.S. Coast Guard (USCG)/US Environmental Protection Agency (USEPA), *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, Publication No. 85-115, 1985; and
- United States Army Corp of Engineers, Safety and Health Requirements Manual, EM-385-1-1
- Resolution Consultants, Programmatic Health and Safety Plan.

2.0 SITE INFORMATION AND SCOPE OF WORK

Resolution Consultants will conduct an Expanded SI at the Dredge Spoil Area on Fleming Key at NAS Key West. Work will be performed in accordance with the applicable Statement of Work (SOW) and associated Sampling and Analysis Plan (SAP) developed for the project. Deviations from the listed SOW will require that the Resolution Consultants Health and Safety Manager or designee review changes made to this HASP to ensure adequate protection of personnel and other property. All changes to this HASP must be documented in Appendix 2.

The following is a summary of relevant data concerning the project site, and the work procedures to be performed. The SAP prepared by Resolution Consultants as a companion document to this HASP provides more detail concerning both site history and planned work operations.

2.1 Site Information

This section provides a general description and historical information associated with the site.

2.1.1 General Description

The 6,249 acre area of NAS Key West is distributed across 14 properties in the Florida Keys. The 42-acre Dredge Spoil Area is located on Fleming Key, which comprises 264 acres. Fleming Key is an elongated piece of land in the Gulf of Mexico extending to the north off the north side of the City of Key West, from which it is separated by a narrow channel. The Navy currently occupies the property. In addition to the Dredge Spoil Area, Fleming Key is utilized for weapons magazines, Special Forces training, and a City of Key West Wastewater Treatment Plant.

The Expanded SI at the Dredge Spoil Area is designed to more fully characterize MEC at the MRS prior to the design of an interim removal action. The Expanded SI at the Dredge Spoil Area involves the following field activities:

- Mobilization/demobilization;
- Land surveying;
- Vegetation removal; and
- Digital geophysical mapping (DGM).

Due to the potential MEC hazards at the site, Resolution Consultants will provide MEC avoidance support during all field activities conducted within the site boundaries.

2.1.2 Site Background/History

The Navy has maintained a presence in the Florida Keys for more than 125 years. In 1823, the first naval base in Key West was established to combat piracy in South Florida. Expansion of the base occurred in stages, between 1823 and 1917, and coincided with periods of military activity during the Mexican War, the Spanish-American War, and World War I. On 18 December 1917, Naval Air Base Key West was commissioned. Construction of a small coastal air patrol station began 13 July 1917 on Trumbo Point Annex, with seaplane training commencing in January 1918. During WWI, the base was used primarily for anti-submarine patrol operations and as a flight training station. At the end of the war, the base was decommissioned and many of the buildings were destroyed, although the land holdings remained property of the United States government.

At the onset of WWII, the base was re-opened to support Naval destroyers and patrol bomber aircraft. Satellite facilities, including Meacham Field and a runway at Boca Chica, were developed. On 15 December 1940, the seaplane base was designated as a Naval Air Station. In May 1945, the satellite fields were combined into one aviation facility, NAS Key West. After WWII, NAS Key West was retained as a training facility. During the subsequent Cuban Missile crisis, operational and reconnaissance flights were flown from

the station. In March 1979, a decision was made to keep NAS Key West as a fully operational Naval Air Station.

NAS Key West's present-day mission is to provide pilot training facilities and services, as well as access to airspace and training ranges for tactical aviation squadrons. NAS Key West offers access to one of the primary range complexes at which aircrews of the United States Atlantic Fleet train. The NAS Key West Range Complex, encompassing 25,498 square nautical miles of ocean, consists of an at-sea Operating Area that includes surface and subsurface waters, offshore special use airspace, a submerged surface target, and other special-use airspace. In addition, the range includes a Tactical Combat Training System that is used for air-to-air combat training. As such, NAS Key West serves as the Navy's East Coast pilot training facility for tactical aviation squadrons.

Fleming Key was created by dredged material beginning in approximately 1941. In 2003, the Dredge Spoil Area was created as an upland placement site for dredged materials not approved for ocean disposal. A turtle screen was reportedly used to limit the size of items transported through dredging equipment. Two munitions items were reported during the dredging, including a 7.2-inch Hedgehog rocket and a 76 mm artillery projectile. These items were destroyed by EOD personnel in August 2004. In 2008, several munitions items were observed on the ground surface at the Dredge Spoil Area, including a 20 mm casing, a .50 caliber casing, and a possible 46 mm butt and primer. In 2009, several munitions items were observed on the ground surface, including 20 mm expended cartridge casings and .50 caliber expended cartridge casings. A metal gas cylinder and other items and cultural debris ranging from one inch to four feet in length were also observed.

2.1.3 Previous Investigation

An SI was performed at the Fleming Key Dredge Spoil Area in 2010. The focus of the field activities was to investigate potential MEC contamination at the site. No munitions constituents (MC) sampling was performed as part of the SI. The field activities included a UXO detector-aided surface survey intended to locate and identify potential MEC or Munitions Potentially Presenting an Explosive Hazard (MPPEH) on the ground surface along accessible portions of transects spaced at 50-foot intervals, and a detector-aided subsurface survey to qualitatively characterize the quantity of shallow subsurface anomalies (potentially representing buried MEC) along select transects.

The survey was conducted using hand-held magnetic locators, including a Schonstedt GA-42Cx and a White Spectrum XLT. No MEC or MPPEH items were identified on the ground surface. MD related to dredge spoil deposition were located and documented on the surface. The MD included seven 20 mm casings, four casings ranging from 0.30 to 0.762 calibers, and one 75 mm x 11 inch unknown munitions related item Metallic cultural debris were also observed, including manhole covers, EOD magazines, and fence material. The area was divided into north, central, and south portions. Anomalies were abundant in all three portions, although most concentrated in the central portion. A total of 130, 200, and 94 anomaly detections were documented in the north, central, and south portions, respectively.

2.2 Scope of Work

Personnel will mobilize/demobilize to/from the site, and perform land surveying, vegetation removal, and DGM across the site. Trained UXO technicians will function as safety escorts during all field activities within the site boundaries and implement MEC avoidance procedures. The following subsections summarize the field activities to be performed during the Expanded SI. Additional details on these activities can be found in the SAP.

2.2.1 Mobilization/Demobilization

Mobilization and demobilization represent limited pre- and post-field activities. These activities include the initial transport of personnel and equipment to the site, and post-work activities, including removal of equipment and personnel from the site, and general housekeeping. This activity does not include any activities within the site boundaries that would require a UXO safety escort.

2.2.2 Land Surveying

Island Surveying, Inc., a Registered Land Surveyor in the State of Florida, will establish transect and grid control points for use in subsequent vegetation removal and DGM activities at the site, as well as survey the perimeter of the fenced-in area which encloses the Dredge Spoil Area. The survey crew will work directly with UXO Technicians, who will conduct anomaly avoidance procedures during survey operations.

2.2.3 Vegetation Removal

UXO Biz, Inc., will complete vegetation removal will involve the clearing of small trees and brush within planned DGM transects/grids. Small trees and shrubs up to four inches in diameter at a height of up to and exceeding eight feet above ground surface (in order to allow walking conditions at tree canopied sites) will be cut down to a height of three inches or less above ground surface. No stumps or root systems shall be removed. The vegetation shall be ground to mulch and spread evenly on the ground directly outside the area identified for vegetation removal. The vegetation removal crew will work directly with UXO Technicians, who will conduct anomaly avoidance procedures during vegetation removal operations. UXO Technicians' will advance ahead of vegetation removal personnel, except in cases whereby the grass thickness limits the technicians' visual scan or hinders analogue detector avoidance assessments to such a level that standard avoidance techniques are not possible. In these areas, the vegetation removal crews will remove the vegetation in height layers of 1-2 ft increments, with UXO Tech assessment of the area prior to clearing each layer, down to within a foot of ground surface at which the UXO Technician can complete a thorough assessment of surface ordnance hazards prior to directing the vegetation removal teams to complete the clearance down to grade.

2.2.4 Digital Geophysical Mapping

Transect- and grid-pattern DGM surveys will be conducted using a Geonics EM31-MKII Terrain Conductivity Meter and an EM61-MKII high-sensitivity metal detector. UXO Technicians will escort geophysical survey teams and advance ahead of DGM personnel. An estimated 5 miles of transects will be initially surveyed across the site. After completion of transect surveys, grid-pattern surveys of up to 14, 100-foot by 100-foot grids will be completed in high-response areas identified during transect surveys using the EM61-MKII system. This full-coverage focused survey will be conducted within a total area of up to three acres. Up to 500 anomalies will be pin-pointed within the confines of the grids or along transects using the EM61-MKII system in conjunction with GPS instrumentation.

2.2.5 Utility Clearance

Limited intrusive activities associated with survey control point and geophysical test strip installation will be conducted during the Expanded SI. Therefore, all subsurface utilities will be located and marked in advance of field activities at the Dredge Spoil Area. Utilities will be cleared through the local one-call system and the appropriate NAS Key West department. Additional utility clearance may be required if the scope of the investigation is modified.

2.2.6 Anomaly Avoidance

Anomaly avoidance procedures will include a UXO safety escort to conduct an advanced instrument-aided visual survey of areas to be traversed during land survey, vegetation removal, and DGM activities. Intrusive anomaly investigation is not authorized during anomaly avoidance operations. However, locations of limited intrusive activities (i.e., survey control point and geophysical test strip installation locations) will first be cleared of subsurface anomalies using a Schonstedt GA-42Cx and a White Spectrum XLT. These MEC avoidance procedures will be completed by a team of one UXO Tech III and one UXO Tech II under the oversight of the Senior UXO Supervisor (SUXOS). If potential MEC is encountered, a red pin flag with plumbers cone will mark the location so future teams may avoid the location and maintain appropriate distances until final identification, disposition, and disposal. Additional information on MEC-UXO operations can be found in *5-514-Munitions and Explosives of Concern / Unexploded Ordnance*.

2.2.7 Additional Work Operations

Operations at the site may require additional tasks not identified in this section or addressed in the THAs in **Attachment 3**. Before performing any task not covered in this HASP, a THA must be prepared and approved by the Resolution Consultants Health and Safety Manager.

3.0 HAZARD ASSESSMENT (SAFETY)

3.1 Physical Hazards

The following physical hazards are anticipated to be present on the site. Additional hazards may be noted on the THAs developed for the individual tasks.

3.1.1 Slips, Trips, Falls, and Protruding Objects

A variety of conditions may exist that may result in injury from slips, trips, falls, and protruding objects. Slips and trips may occur as a result of wet, slippery, or uneven walking surfaces. To prevent injuries from slips and trips, always keep work areas clean; keep walkways free of objects and debris; and report/clean up liquid spills. Serious injuries may occur as a result of falls from elevated heights. Always wear fall protection while working at heights of six feet or greater above the next lower level. Protruding objects are any object that extends into the path of travel or working area that may cause injury when contacted by personnel. Always be aware of protruding objects and when feasible remove or label the protruding object with an appropriate warning.

3.1.2 Housekeeping

During site activities, work areas will be continuously policed for identification of excess trash and unnecessary debris. Excess debris and trash will be collected and stored in an appropriate container (e.g., plastic trash bags, garbage can, roll-off bin) prior to disposal. At no time will debris or trash be intermingled with contaminated materials. Additional information on the requirements of housekeeping can be found in 5-307-*Housekeeping, Worksite*.

3.1.3 Manual Lifting

Most materials associated with investigation activities are moved by hand. The human body is subject to severe damage in the forms of back injury, muscle strains, and hernia if caution is not observed in the handling process. Whenever possible, use mechanical assistance to lift or move materials and at a minimum, use at least two people to lift, or roll/lift with your arms as close to the body as possible. For additional requirements, refer to 5-308-*Manual Lifting* and 5-308-*Manual Lifting Safe Work Practices*.

3.1.4 Utilities

As noted in Section 2.2.4, all utilities will be located at the Dredge Spoil Area in advance of field activities. Utilities will be cleared through the local one-call system and the through the appropriate NAS Key West department. The phone number for the applicable state agency is provided in the Emergency Contacts list found in Section 8. For additional requirements, refer to 5-417-*Utilities Underground*. Additional utility clearance may be required if the scope of the investigation is modified.

3.1.5 Noise Exposure Monitoring

When mowing/vegetation removal equipment is in operation, it will be necessary to ensure that hearing protection is utilized when hazardous noise levels are present [85 decibels on the A-weighted scale (dBA) or greater]. Refer to 5-510-*Hearing Conservation Program*, for additional information and requirements.

3.2 Biological Hazards

It is anticipated that numerous biological hazards will be present on the project site. Poisonous plants may be found along with ticks and other biting insects. Stinging insects, such as bees and wasps may build nests or be within proximity of the work zone. Below is a discussion of the most common biological hazards found on project sites, and those anticipated to be of concern at the site.

3.2.1 Small Mammals

Working in the field either directly or indirectly with small mammals has inherent risks of injury or exposure to zoonotic diseases (infectious diseases that can be transmitted from animals to humans) that all field staff

need to protect themselves against. The risks are usually higher when there is direct contact with a wild animal, either through a break in the skin (blood), saliva, or excrement; however, there are also risks through air-borne diseases (e.g., Hantavirus).

3.2.2 Venomous Animals

Some animals have the ability to inject venom. These include: rattlesnakes, black widow spiders, and scorpions. These all have limited distributions, so in most areas you are unlikely to encounter them. Other spiders possess venom but they are not harmful to humans. Shrews have poisonous saliva but the chance of being envenomated by them is extremely unlikely unless they are handled. If bitten by any of these animals special care should be taken to treat the wound as it may lead to complications due to the toxin. A bite from a venomous snake, which may inject varying degrees of toxic venom, is rarely fatal but should always be considered a medical emergency.

3.2.3 Poisonous Plants

Sensitivity to toxins generated by plants, insects, and animals varies according to dosage and the ability of the victim to process the toxin; therefore, it is difficult to predict whether a reaction will occur, or how severe the reaction will be. Staff should be aware that there are a large number of organisms capable of causing serious irritations and allergic reactions. Some reactions will only erupt if a secondary exposure to sunlight occurs. Depending on the severity of the reaction, the result can result in severe scarring, blindness or even death.

Plants that field staff should recognize and take precautions to avoid include: Poison Sumac, Poison Ivy (terrestrial and climbing), Poison Oak, Giant Hogweed (or Giant Cow Parsnip), Wild Parsnip, Devil's Club, and Stinging Nettle. Many others are extremely poisonous to eat (e.g., Poison Hemlock, Water Parsnip) – do not eat anything that has not been identified.

A large number of plants are not harmful to touch but may contain poisonous berries or foliage that could cause serious complications or death if they are ingested. It goes without saying not to eat any berries or plants that you are not absolutely sure of their identity. Examples of common poisonous or irritating plant species, common to the United States, are shown in **Table 3-1**.

Table 3-1: Hazardous Plant Identification Guide

<p>Poison Ivy Grows in West, Midwest, Texas, East Several forms – vine, trailing shrub, or shrub Three leaflets (can vary 3-9) Leaves green in summer, red in fall Yellow or green flowers White berries</p>	
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Poison Oak

Grows in the East (NJ to Texas), Pacific Coast
6-foot tall shrubs or long vines
Oak-like leaves, clusters of three
Yellow berries



3.2.4 Insects

Insects for which precautionary measures should be taken include: mosquitoes (potential carriers of disease aside from dermatitis), black flies, wasps, bees, and ticks.

Wasps and bees will cause a painful sting to anyone if they are harassed. They are of most concern for individuals with allergic reactions who can go into anaphylactic shock. Also instances where an individual is exposed to multiple stings can cause a serious health concern for anyone. These insects are most likely to sting when their hive or nest is threatened.

Ticks can be encountered when walking in tall grass or shrubs. They crawl up clothing searching for exposed skin where they will insert mouthparts to drink blood. Most serious concern is possibility of contracting Lyme disease which is spread by the Black-legged or Deer Tick. Occasionally a tick can cause Tick Paralysis if it is able to remain feeding for several days. Full recovery usually occurs shortly after the tick is removed.

3.3 Ultraviolet Hazards

The 2010 historical UV Index for the Key West area showed that worker's UV exposures were in the HIGH category beginning in March and lasting until November with worker's exposures in the EXTREME category from May through September. Workers performing field work outdoors may be susceptible to sunburn if not properly protected with sunscreen or protective clothing and hats. Skin can burn in minutes when the UV Index is VERY HIGH. Protective measures are advisable.

3.4 Weather Hazards

The UXO Safety Officer (UXOSO) will be attentive to daily weather forecasts for the project area each morning. Predicted weather conditions of potential field impact are to be included in safety briefings and the THA for that day. Weather changes should initiate a review and update of the THA as necessary. Weather-related hazards will directly correlate to the type of weather involved. Hot, dry weather may cause greater dust emissions, particularly during intrusive activities. Rain may increase slip/trip hazards.

Severe weather can occur with little warning. Employees will be vigilant for the potentials for storms, lightning, high winds, and flash flood events. Additionally, lightning strikes during electrical storms could also be a potential hazard. The following procedures will be implemented once thunder is heard or lightning spotted:

- If thunder is heard, all site personnel are to be alert of any visible lightning flashes. The UXOSO will observe the storm front and track the direction it is moving. The UXOSO will continue to observe the storm front until it passes or until the prevailing direction is determined to be away from the site.
- If lightning is observed, the UXOSO is to be notified. When the next lightning flash is observed, a "second" count shall be initiated from the time the lightning is observed until the thunder from the strike is heard.

- If the “second” count is greater than 30, the Site Supervisor or UXOSO will continually observe the storm front. If the front is moving away, work will continue. If the front is moving towards the site, the UXOSO will initially place workers on alert for potential evacuation.
- If the “second” count is less than or equal to 30, the UXOSO will issue the evacuation command and all workers are to report to the break/lunch trailer. Work can be re-initiated once the front has passed by and thunder has not been heard for 30 minutes.
- If lightning is observed and the storm front is moving away from or around the site and is greater than 20 miles away, work will be permitted to continue. The location of the storm can be confirmed via internet access to a local weather website that has a Doppler radar tracking system.

3.5 MEC Hazards and Anomaly Avoidance

Potential MEC at the site presents a potential explosive hazard that can kill or seriously injure. As described in Section 2.2, trained UXO technicians will perform MEC avoidance procedures including instrument-aided visual surveys at the site to prevent potential contact unexploded ordnance (UXO) or discarded military munitions (DMM).

UXO are explosive or chemical munitions that were primed, fuzed, armed or otherwise prepared for action; have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and remain unexploded either by malfunction, design, or any other cause. All UXO, including “practice” rounds, normally contain some form of explosive (spotting charges) and, if detonated, can cause serious harm/injury. They may be at ground surface, partially buried, or completely buried. Through time, UXO can blend into the surroundings. Whether whole or fragmented, all UXO present a potential hazard. DMM are munitions that were not prepared for action or fired, but instead have been abandoned without proper disposal. Explosive hazards from DMM are similar to that of UXO.

The purpose of anomaly avoidance is to avoid surface MEC and MPPEH and subsurface anomalies during investigation activities. Avoidance procedures include a visual surface survey aided by detection instruments, including a Schonstedt GA-42Cx and a White Spectrum XLT. Intrusive anomaly investigation is not authorized during anomaly avoidance operations. The following requirements shall be observed at the MRS during all phases of the investigation.

- UXO Technicians will escort personnel and visitors during all activities within the MRS.
- Personnel and visitors shall follow the instructions provided by UXO Technicians and restrict themselves to areas and routes identified by UXO Technicians.
- UXO Technicians will conduct tailgate safety briefings for all site personnel and visitors.
- The UXOS shall have final on-site authority on anomaly avoidance procedures and explosive safety issues.
- UXO Technicians shall be notified of any unidentified items observed.
- Direct visual observation of personnel and visitors within the MRS shall be maintained by UXO Technicians.
- Devices that produce sparks or flames are prohibited within the MRS. Smoking is not permitted.
- Cell phones or two-way radios will be used only with the permission of UXO Technicians.

UXO Technicians shall escort all personnel and visitors within the MRS. Any surface MEC discovered will be marked and reported. Subsurface anomalies will not be evaluated, but will be marked and avoided.

3.5.1 Safety Warnings

Do Not Approach — If you see MEC, stop immediately.

Do Not Transmit — If near MEC, do not use two-way radios like walkie-talkies or citizens band.

Do Not Disturb — Do not touch or attempt to move the MEC or objects surrounding it.

Do Not Drop — If a MEC item is mistakenly picked up, calmly and carefully lay it down.

Do Not Be Curious — Do not investigate or examine. Follow the “3R’s.”

Additional information pertaining to MEC and associated safety measures can be found in SH&E SOP 5-514-*Munitions and Explosives of Concern/Unexploded Ordnance (MEC-UXO)*.

3.6 Hazard Analysis

THAs have been completed for all tasks identified in the Scope of Work (**Attachment 3**), including:

- Mobilization/demobilization;
- Land surveying;
- Vegetation removal; and
- Digital geophysical mapping (DGM).

As a result of unanticipated work activities or changing conditions, additional THAs may be required. All additional THAs will be reviewed and approved by the Resolution Consultants Health and Safety Manager or designee.

3.7 Task Specific SH&E Procedures

Personnel may be exposed to a variety of chemical, physical, and radiological hazards resulting from task or equipment-specific activities. The controls for many of these hazards are discussed in the Resolution Consultants SH&E SOPs. Copies of applicable SOPs are located in Attachment 4.

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4.0 SH&E REQUIREMENTS (SAFETY)

4.1 HAZWOPER Qualifications

Personnel performing work at the job site must be qualified as trained Hazardous Waste Response and Emergency Operations (HAZWOPER) workers (unless otherwise noted in specific THAs or by the UXOSO), and must meet the medical monitoring and training requirements specified in the Resolution Consultants' SH&E Standard Operating Procedures.

If site monitoring procedures indicate that a possible exposure has occurred above the OSHA permissible exposure limit (PEL), employees may be required to receive supplemental medical testing to document any symptoms that may be specific to the particular materials present.

4.2 Site-Specific Safety Training

All Resolution Consultants personnel performing activities at the site will be trained in accordance with 5-003-*SH&E Training*. All personnel are required to remain current in all of their required training and evaluate their need for additional training when there is a change in work. In addition to the general health and safety training programs, personnel will be required to complete any supplemental task specific training developed for the tasks to be performed. Administration and compliance with the requirements for additional task-specific training will be the responsibility of the project or lead manager. Any additional required training that is completed will be documented and tracked in the project files.

4.2.1 Competent Person Training Requirements

To complete the planned scope of work, a competent person (per OSHA definition) must be designated to perform the required daily on-site inspections of operations and/or equipment. The competent person may be a Resolution Consultants (if responsible for supervising that activity) or the subcontractor's employee. Designated competent person(s) for this project are shown in **Table 4-1**.

Table 4-1: Task Specific Competent Persons

Employee Name	Organization	Area of Competency
SUXOS and UXOSO (TBD)	Resolution Consultants	UXO/MEC Activities

Note:

The training requirements for competent persons are specified in the indicated SOPs and/or 5-202, *Competent Person Designation*. By identifying an employee as a "competent person", that person has now been authorized to take prompt corrective measures to eliminate hazards.

4.3 Tailgate Meetings

Prior to the commencement of daily project activities, a tailgate meeting will be conducted by the site UXO Management Team, consisting of the team led by the Senior UXO Supervisor (SUXOS) with input from the UXO Quality Control Specialist (UXOQCS), the UXO Safety Officer (UXOSO), and the UXO Field Team Leader (UXOFTL) or Field Quality Control Scientist, as needed, to review the specific requirements of this HASP and each applicable THA. Attendance at the daily tailgate meeting is mandatory for all employees at the site covered by this HASP and must be documented on the SWAP form (Attachment 5). All safety training documentation is to be maintained in the project file by the UXOSO with sign-off sheets maintained by the SUXOS as well.

4.4 Hazard Communication

Hazardous materials that may be encountered as existing on-site environmental or physical/health contaminants during the work activities are addressed in this HASP and their properties, hazards, and associated required controls will be communicated to all affected staff and subcontractors. In addition, any employee or organization (contractor or subcontractor) intending to bring any hazardous material onto this Resolution Consultants-controlled work site must first provide a copy of the item's Material Safety Data Sheet (MSDS) to the UXOSO for review and filing (the UXOSO will maintain copies of all MSDS on site). MSDS may not be available for locally-obtained products, in which case some alternate form of product hazard documentation will be acceptable in accordance with the requirements of *5-507-Hazardous Materials Communication/WHMIS*. All personnel shall be briefed on the hazards of any chemical product they use, and shall be aware of and have access to all MSDS.

All containers on site shall be properly labeled to indicate their contents. Labeling on any containers not intended for single-day, individual use shall contain additional information indicating potential health and safety hazards (flammability, reactivity, etc.).

Attachment 7 contains copies of MSDS for hazardous contaminants of concern and hazardous chemicals planned to be brought onsite at the time this HASP is prepared. This information will be updated as required during site operations.

4.5 Confined Space Entry

Confined space entry is not anticipated for this site. If confined spaces are identified, the SSO/site supervisor will inform all employees of the location of confined spaces and prevent unauthorized entry. Confined space entry procedures and training requirements are listed in *5-301-Confined Spaces*.

4.6 Hazardous, Solid, or Municipal Waste

If hazardous, solid, and/or municipal wastes are generated during any phase of the project, the waste shall be accumulated, labeled, and disposed of in accordance with applicable Federal, State, and/or local regulations. Consult the Project Manager for further guidance.

4.7 General Safety Rules

All site personnel shall conduct themselves in a safe manner and maintain a working environment that is free of additional hazards, in adherence to *5-001-Safe Work Standards and Rules* and *5-307-Housekeeping, Worksite*.

4.7.1 Housekeeping

During site activities, work areas will be continuously policed for identification of excess trash and unnecessary debris. Excess debris and trash will be collected and stored in an appropriate container (e.g., plastic trash bags, garbage can, roll-off bin) prior to disposal. At no time will debris or trash be intermingled with waste PPE or contaminated materials.

4.7.2 Smoking, Eating, or Drinking

Smoking, eating, and drinking will not be permitted inside any controlled work area at any time. Field workers will first wash hands and face immediately after leaving controlled work areas (and always prior to eating or drinking). Consumption of alcoholic beverages is prohibited at any Resolution Consultants site. Smoking, eating, or drinking must be in an approved area.

4.7.3 Personal Hygiene

The following personal hygiene requirements will be observed:

Water Supply: A water supply meeting the following requirements will be utilized:

Potable Water — An adequate supply of potable water will be available for field personnel consumption. Potable water can be provided in the form of water bottles, canteens, water coolers, or drinking fountains.

Where drinking fountains are not available, individual-use cups will be provided as well as adequate disposal containers. Potable water containers will be properly identified in order to distinguish them from non-potable water sources. Potable water container fill ports will be sealed and the interior will be inspected daily to prevent contamination.

Non-Potable Water — Non-potable water may be used for hand washing and cleaning activities. Non-potable water will not be used for drinking purposes. All containers of non-potable water will be marked with a label stating:

Non-Potable Water

Not Intended for Drinking Water Consumption

Toilet Facilities: A minimum of one toilet will be provided for every 20 personnel on site, with separate toilets maintained for each sex except where there are less than five total personnel on site. For mobile crews where work activities and locations permit transportation to nearby toilet facilities on-site facilities are not required.

Washing Facilities: Washing facilities will be provided to personnel at the site. The use of water and hand soap (or similar substance) will be required by all employees following exit from an Exclusion Zone, prior to breaks, and at the end of daily work activities.

4.7.4 Buddy System

All field personnel will use the buddy system when working within any controlled work area. Personnel belonging to another organization on site can serve as "buddies" for Resolution Consultants personnel. Under no circumstances will any employee be present alone in a controlled work area. For areas not in controlled work areas, the procedures outlined in 5-314-*Working Alone and Remote Travel* will be followed at all times.

4.8 Stop Work Authority

All employees have the right and duty to stop work when conditions are unsafe, and to assist in correcting these conditions as outlined in 5-002-*Stop Work Authority*. Whenever the UXOSO determines that workplace conditions present an uncontrolled risk of injury or illness to employees, immediate resolution with the appropriate supervisor shall be sought. Should the supervisor be unable or unwilling to correct the unsafe conditions, the UXOSO is authorized and required to stop work, which shall be immediately binding on all affected Resolution Consultants employees and subcontractors.

Upon issuing the stop work order, the UXOSO shall implement corrective actions so that operations may be safely resumed. Resumption of safe operations is the primary objective. However, operations shall not resume until the Resolution Consultants Health and Safety Manager or designee has concurred that workplace conditions meet acceptable safety standards.

4.9 Client Specific Safety Requirements

All activities conducted at the Fleming Key Dredge Spoil Area shall be conducted with approval from the Naval Ordnance Safety and Security Activity (NOSSA). Work shall be conducted in accordance with OPNAV Instruction 8020.15A, NAVSEA Operations Pamphlet (OP) 5, NOSSA Instruction (NOSSAINST) 8020.15C, DOD 6055.09-Std, and all other DOD requirements with regard to personnel, equipment, and procedures. All work shall be conducted in accordance with the approved Explosives Safety Submission (ESS) Determination per NOSSAINST 8020.15C.

Anomaly avoidance requirements outlined in Section 4.8 and in SH&E 514 shall be adhered to, in addition to the provisions of NAVSEA OP 5 Chapter 14-10.5. In accordance with NOSSAINST 8020.15C (Sec. 5.a.(5)(a)3, an ESS is not required for anomaly avoidance activities not involving intentional contact with MEC. An ESS Determination Request (DR) was submitted and approved.

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5.0 EXPOSURE MONITORING PROCEDURES (HEALTH)

5.1 Contaminant Exposure Hazards

The following is a discussion of the hazards presented to worker personnel during this project from on-site chemical and radiological hazards known, suspected or anticipated to be present on site. Exposure symptoms and applicable first aid information for each suspected site contaminant identified in the Scope of Work are located in the following subsections.

No contaminants have been identified at the Dredge Spoil Area. There is a potential for the presence of certain contaminants that are associated with munitions, including metals and explosive contaminants such as trinitrotoluene (TNT) and cyclotrimethylenetrinitramine (RDX).

If any of these chemicals are present, direct contact would be minimal since limited intrusive operations (i.e., land survey control point and geophysical instrument strip installation) are planned. Area wetting techniques should be employed if dust generation occurs. Personal Protective Equipment (PPE) and basic hygiene practices will be the principal method of minimizing exposure.

5.2 Heat and Cold Stress

Heat and cold stress may vary based upon work activities, PPE/clothing selection, geographical locations, and weather conditions. To reduce the potential of developing heat/cold stress, be aware of the signs and symptoms of heat/cold stress and watch fellow employees for signs of heat/cold stress.

Heat stress can be a significant field site hazard, particularly for non-acclimated personnel operating in a hot, humid setting. Site personnel will be instructed in the identification of a heat stress victim, the first-aid treatment procedures for the victim and the prevention of heat stress casualties. Work-rest cycles will be determined and the appropriate measures taken to prevent heat stress as outlined in 5-511 *Heat Stress Prevention Program*.

5.2.1 Responding to Heat-Related Illness

The guidance in **Table 5-3** will be used in identifying and treating heat-related illness.

Table 5-1: Identification and Treatment of Heat-Related Illness

Type of Heat-Related Illness	Description	First Aid
Mild Heat Strain	The mildest form of heat-related illness. Victims exhibit irritability, lethargy, and significant sweating. The victim may complain of headache or nausea. This is the initial stage of overheating, and prompt action at this point may prevent more severe heat-related illness from occurring.	Provide the victim with a work break during which he/she may relax, remove any excess protective clothing, and drink cool fluids. If an air-conditioned spot is available, this is an ideal break location. Once the victim shows improvement, he/she may resume working; however, the work pace should be moderated to prevent recurrence of the symptoms.

Type of Heat-Related Illness	Description	First Aid
Heat Exhaustion	Usually begins with muscular weakness and cramping, dizziness, staggering gait, and nausea. The victim will have pale, clammy moist skin and may perspire profusely. The pulse is weak and fast and the victim may faint unless they lie down. The bowels may move involuntarily.	Immediately remove the victim from the work area to a shady or cool area with good air circulation (<i>avoid drafts or sudden chilling</i>). Remove all protective outerwear. Call a physician. Treat the victim for shock. (Make the victim lie down, raise his or her feet 6–12 inches, and keep him/her cool by loosening all clothing). If the victim is conscious, it may be helpful to give him/her sips of water. Transport victim to a medical facility ASAP.
Heat Stroke	The most serious of heat illness, heat stroke represents the collapse of the body's cooling mechanisms. As a result, body temperature may rise to 104 degrees Fahrenheit or higher. As the victim progresses toward heat stroke, symptoms such as headache, dizziness, nausea can be noted, and the skin is observed to be dry, red, and hot. Sudden collapse and loss of consciousness follows quickly and death is imminent if exposure continues. Heat stroke can occur suddenly.	Immediately evacuate the victim to a cool/shady area. Remove all protective outerwear and as much personal clothing as decency permits. Lay the victim on his/her back w/the feet slightly elevated. Apply cold wet towels or ice bags to the head, armpits, and thighs. Sponge off the bare skin with cool water. The main objective is to cool without chilling the victim. Give no stimulants or hot drinks. Since heat stroke is a severe medical condition requiring professional medical attention, emergency medical help should be summoned immediately to provide onsite treatment of the victim and proper transport to a medical facility.

6.0 ENVIRONMENTAL PROGRAM (ENVIRONMENT)

6.1 Environmental Compliance And Management

This project and the individual tasks will comply with all federal, state, provincial, and local environmental requirements.

6.1.1 Air Emissions

Since only limited intrusion activities are planned, significant dust generation is not anticipated during investigation activities. Limited dust generation may occur during vegetation removal and typical dust suppression techniques (application of water spray) will be used to suppress nuisance dust.

6.1.2 Hazardous Waste Management

No generation of hazardous waste is anticipated during this investigation.

6.1.3 Storm Water Pollution Prevention

No ground disturbance sufficient to disrupt current storm water infiltration or runoff is anticipated during this investigation.

6.1.4 Wetlands Protection

There are no wetlands in or adjacent to the proposed work zone.

6.1.5 Critical Habitat Protection

There are no Critical Habitats in or adjacent to the proposed work zone.

6.1.6 Environmental Protection

No specific environmental protection measures are planned during this investigation.

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7.0 PERSONAL PROTECTIVE EQUIPMENT

7.1 Personal Protective Equipment

The purpose of PPE is to provide a barrier, which will shield or isolate individuals from the chemical and/or physical hazards that may be encountered during work activities. 5-208-*Personal Protective Equipment Program* lists the general requirements for selection and usage of PPE. 7-1 lists the minimum PPE required during site operations and additional PPE that may be necessary. The specific PPE requirements for each work task are specified in the individual THAs. By signing this HASP the employee agree having been trained in the use, limitations, care and maintenance of the protective equipment to be used by the employee at this project. If training has not been provided, request same of the PM/UXOSO for the proper training before signing.

Table 7-1: Personal Protective Equipment

Type	Material	Additional Information
Minimum PPE		
Boots	Leather	
Safety Glasses		ANSI Approved; ≥98% UV protection
Work Uniform		No shorts/cutoff jeans or sleeveless shirts
Additional PPE		
Hearing Protection	Ear plugs and/ or muffs	In hazardous noise areas
Gloves	Outer: Leather	If working with sharp objects or powered equipment.
Hard Hat		If working around overhead hazards
Protective Chemical Gloves	Inner: Nitrile	Use during handling of all potentially impacted media.
Sunscreen		SPF 30 or higher

7.2 PPE Doffing and Donning (UTILIZATION) Information

The following information is to provide field personnel with helpful hints that, when applied, make donning and doffing of PPE a more safe and manageable task:

- Never cut disposable booties from your feet with basic utility knives. This has resulted in workers cutting through the bootie and the underlying sturdy leather work boot, resulting in significant cuts to the legs/ankles. Use a pair of scissors or a package/letter opener (cut above and parallel with the work boot) to start a cut in the edge of the bootie, then manually tear the material down to the sole of the bootie for easy removal.
- When applying duct tape to PPE interfaces (wrist, lower leg, around respirator, etc.) and zippers, leave approximately one inch at the end of the tape to fold over onto itself. This will make it much easier to remove the tape by providing a small handle to grab while still wearing gloves. Without this fold, trying to pull up the tape end with multiple gloves on may be difficult and result in premature tearing of the PPE.
- Have a “buddy” check your ensemble to ensure proper donning before entering controlled work areas. Without mirrors, the most obvious discrepancies can go unnoticed and may result in a potential exposure situation.
- Never perform personal decontamination with a pressure washer.

7.3 Decontamination

7.3.1 General Requirements

All possible and necessary steps shall be taken to reduce or minimize contact with chemicals and contaminated/impacted materials while performing field activities (e.g., avoid sitting or leaning on, walking through, dragging equipment through or over, tracking, or splashing potential or known contaminated/impacted materials, etc.)

All personal decontamination activities shall be performed with an attendant (buddy) to provide assistance to personnel that are performing decontamination activities. Depending on specific site hazards, attendants may be required to wear a level of protection that is equal to the required level in the Exclusion Zone (EZ).

All persons and equipment entering the EZ shall be considered contaminated, and thus, must be properly decontaminated prior to entering the Support Zone (SZ).

Decontamination procedures may vary based on site conditions and nature of the contaminant(s). If chemicals or decontamination solutions are used, care should be taken to minimize reactions between the solutions and contaminated materials. In addition, personnel must assess the potential exposures created by the decontamination chemical(s) or solutions. The applicable Material Safety Data Sheet (MSDS) must be reviewed, implemented, and filed by personnel contacting the chemicals/solutions.

All contaminated PPE and decontamination materials shall be contained, stored and disposed of in accordance with site-specific requirements determined by site management.

7.3.2 Decontamination Equipment

The equipment required to perform decontamination may vary based on site-specific conditions and the nature of the contaminant(s). The following equipment is commonly used for decontamination purposes:

- Soft-bristle scrub brushes or long-handled brushes to remove contaminants
- Hoses, buckets of water or garden sprayers for rinsing
- Large plastic/galvanized wash tubs or children's wading pools for washing and rinsing solutions
- Large plastic garbage cans or similar containers lined with plastic bags for the storage of contaminated clothing and equipment
- Metal or plastic cans or drums for the temporary storage of contaminated liquids
- Paper or cloth towels for drying protective clothing and equipment

7.3.3 Personal/Equipment Decontamination

All equipment leaving the EZ shall be considered contaminated and must be properly decontaminated to minimize the potential for exposure and off-site migration of impacted materials. Such equipment may include, but is not limited to: sampling tools, heavy equipment, vehicles, PPE, support devices (e.g., hoses, cylinders, etc.), and various handheld tools.

All employees performing equipment decontamination shall wear the appropriate PPE to protect against exposure to contaminated materials. The level of PPE may be equivalent to the level of PPE required in the EZ. Other PPE may include splash protection, such as face-shields and splash suits, and knee protectors. Following equipment decontamination, employees may be required to follow the proper personal decontamination procedures above.

The PPE to be used on-site is considered disposable and will be removed and containerized in the CRZ during decontamination activities. Suits and booties will be removed first, and gloves last.

1. For Overbootie Removal

- Grasp top of overbootie and roll downward (inside out)

- Using gloved hands, place booties in receptacle
2. For Glove removal:
 - Grasp the cuff of the dominant hand and pull glove over the bulk of the hand, leaving the fingers inside the glove.
 - Use the dominant hand to grasp the cuff of the non-dominant hand and pull the glove completely off (inside-out) and place inside of the dominant hand glove.
 - Once removed, employee should only touch the inside material of the dominant hand glove.
 - Thoroughly wash hands.

For larger equipment, a high-pressure washer may need to be used. Some contaminants require the use of a detergent or chemical solution and scrub brushes to ensure proper decontamination. Before heavy equipment and trucks are taken offsite, the SS and/or SSHO will visually inspect them for signs of contamination. If contamination is present, the equipment must be decontaminated.

For equipment, use the following steps for decontamination:

1. Remove majority of visible gross contamination in EZ
2. Wash equipment in decontamination solution with a scrub brush and/or power wash heavy equipment
3. Rinse equipment
4. Visually inspect for remaining contamination
5. Follow appropriate personal decontamination steps outlined above

All decontaminated equipment shall be visually inspected for contamination prior to leaving the Contaminant Reduction Zone (CRZ). Signs of visible contamination may include an oily sheen, residue or contaminated soils left on the equipment. All equipment with visible signs of contamination shall be discarded or re-decontaminated until clean. Depending on the nature of the contaminant, equipment may have to be analyzed using a wipe method or other means.

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8.0 PROJECT HEALTH AND SAFETY ORGANIZATION

8.1 Project Manager [Todd Haverkost]

The Project Manager (PM) has overall management authority and responsibility for all site operations, including safety. The PM will provide the Site Supervisor with work plans, staff, and budgetary resources, which are appropriate to meet the safety needs of the project operations.

8.2 Site Supervisor [SUXOS, TBD]

The Site Supervisor, or SUXOS, has the overall responsibility and authority to direct work operations at the job site according to the provided work plans. The PM may act as the site supervisor while on site.

8.2.1 Responsibilities

The SUXOS is responsible to:

- Discuss deviations from the work plan with the UXOSO and PM;
- Discuss safety issues with the PM, UXOSO, and field personnel;
- Assist the UXOSO with the development and implementation of corrective actions for site safety deficiencies;
- Assist the UXOSO with the implementation of this HASP and ensuring compliance; and
- Assist the UXOSO with inspections of the site for compliance with this HASP and applicable SOPs.

8.2.2 Authority

The SUXOS has authority to:

- Verify that all operations are in compliance with the requirements of this HASP, and halt any activity that poses a potential hazard to personnel, property, or the environment; and
- Temporarily suspend individuals from field activities for infractions against the HASP pending consideration by the UXOSO, the Resolution Consultants Health and Safety Manager or designee, and the PM.

8.2.3 Qualifications

In addition to being HAZWOPER-trained (see Section 4.1), the Site Supervisor is required to have completed the eight-hour HAZWOPER Supervisor Training Course in accordance with 29 CFR 1910.120 (e)(4).

8.3 Site Safety Officer [UXOSO, TBD]

8.3.1 Responsibilities

The UXOSO is responsible to:

- Update the site-specific HASP to reflect changes in site conditions or the scope of work. HASP updates must be reviewed and approved by the Resolution Consultants Health and Safety Manager or designee. Updates must be documented using the Revision History in **Attachment 2**;
- Be aware of changes in Resolution Consultants Safety Policies, PSHP, or SOPs;
- Monitor the lost time incidence rate for this project and work toward improving it;
- Inspect the site for compliance with this HASP and the SOPs using the appropriate audit inspection checklist provided by the Resolution Consultants Health and Safety Manager or designee;

- Work with the site supervisor and PM to develop and implement corrective action plans to correct deficiencies discovered during site inspections (deficiencies will be discussed with project management to determine appropriate corrective action);
- Contact the Resolution Consultants Health and Safety Manager or designee for technical advice regarding safety issues;
- Provide a means for employees to communicate safety issues to management in a discreet manner (e.g., suggestion box, etc.);
- Determine emergency evacuation routes, establishing and posting local emergency telephone numbers, and arranging emergency transportation;
- Check that all site personnel and visitors have received the proper training and medical clearance prior to entering the site;
- Establish any necessary controlled work areas (as designated in this HASP or other safety documentation);
- Present tailgate safety meetings and maintain attendance logs and records;
- Discuss potential health and safety hazards with the Site Supervisor, the Resolution Consultants Health and Safety Manager or designee, and the PM; and
- Select an alternate UXOSO by name and inform him/her of their duties, in the event that the UXOSO must leave or is absent from the site (the alternate UXOSO must be approved by the PM).

8.3.2 Authority

The UXOSO has authority to:

- Verify that all operations are in compliance with the requirements of this HASP;
- Issue a "Stop Work Order" under the conditions set forth in this HASP; and
- Temporarily suspend individuals from field activities for infractions against the HASP pending consideration by the Resolution Consultants Health and Safety Manager or designee and the PM.

8.3.3 Qualifications

In addition to being HAZWOPER-qualified, the UXOSO is required to have completed the eight-hour HAZWOPER Supervisor Training Course in accordance with 29 CFR 1910.120 (e)(4).

8.4 Employees

8.4.1 Employee Responsibilities

Responsibilities of employees associated with this project include, but are not limited to:

- Understanding and abiding by the policies and procedures specified in the HASP and other applicable safety policies, and clarifying those areas where understanding is incomplete;
- Providing feedback to health and safety management relating to omissions and modifications in the HASP or other safety policies; and
- Notifying the UXOSO, in writing, of unsafe conditions and acts.

8.4.2 Employee Authority

The health and safety authority of each employee assigned to the site includes the following:

- The right to refuse to work and/or stop work authority when the employee feels that the work is unsafe (including subcontractors or team contractors), or where specified safety precautions are not adequate or fully understood;

- The right to refuse to work on any site or operation where the safety procedures specified in this HASP or other safety policies are not being followed;
- The right to contact the UXOSO or the Resolution Consultants Health and Safety Manager or designee at any time to discuss potential concerns; and
- The right and duty to stop work when conditions are unsafe, and to assist in correcting these conditions.

8.5 Resolution Consultants Health and Safety Manager [John Knopf, CSP]

The Health and Safety Manager is assigned to provide guidance and technical support for the project. Duties include the following:

- Approving this HASP and any required changes;
- Approving the designated UXOSO;
- Reviewing all personal exposure monitoring results; and
- Investigating any reported unsafe acts or conditions.

The Health and Safety Manager may designate another safety professional as the direct liaison for this project. If that is the case, he will remain available for any or all of the tasks listed here or elsewhere in this HASP in lieu of the designee.

8.6 Subcontractors

The requirements for subcontractor selection and subcontractor safety responsibilities are outlined in 5-213-*Subcontractors*. Each Resolution Consultants subcontractor is responsible for assigning specific work tasks to their employees. Each subcontractor's management will provide qualified employees and allocate sufficient time, materials, and equipment to safely complete assigned tasks. In particular, each subcontractor is responsible for equipping its personnel with any required PPE and all required training.

Resolution Consultants considers each subcontractor to be an expert in all aspects of the work operations for which they are tasked to provide, and each subcontractor is responsible for compliance with the regulatory requirements that pertain to those services. Each subcontractor is expected to perform its operations in accordance with its own unique safety policies and procedures, to ensure that hazards associated with the performance of the work activities are properly controlled. Copies of any required safety documentation for a subcontractor's work activities will be provided to Resolution Consultants for review prior to the start of onsite activities, if required.

Hazards not listed in this HASP but known to any subcontractor, or known to be associated with a subcontractor's services, must be identified and addressed to the Resolution Consultants PM or the Site Supervisor prior to beginning work operations. The Site Supervisor or authorized representative has the authority to halt any subcontractor operations, and to remove any subcontractor or subcontractor employee from the site for failure to comply with established health and safety procedures or for operating in an unsafe manner.

8.7 Visitors

Authorized visitors (e.g., client representatives, regulators, Resolution Consultants management staff, etc.) requiring entry to any work location on the site will be briefed by the PM on the hazards present at that location. Visitors will be escorted at all times at the work location and will be responsible for compliance with their employer's health and safety policies. In addition, this HASP specifies the minimum acceptable qualifications, training and personal protective equipment which are required for entry to any controlled work area; visitors must comply with these requirements at all times.

8.7.1 Visitor Access

Visitors to any HAZWOPER controlled-work area must comply with the health and safety requirements of this HASP, and demonstrate an acceptable need for entry into the work area. All visitors desiring to enter any controlled work area must observe the following procedures:

- A written confirmation must be received by Resolution Consultants documenting that each of the visitors has received the proper training and medical monitoring required by this HASP. Verbal confirmation can be considered acceptable provided such confirmation is made by an officer or other authorized representative of the visitor's organization.
- Each visitor will be briefed on the hazards associated with the site activities being performed and acknowledge receipt of this briefing by signing the appropriate tailgate safety briefing form.
- All visitors must be escorted by a Resolution Consultants employee.
- If the site visitor requires entry to any EZ, but does not comply with the above requirements, all work activities within the EZ must be suspended. Until these requirements have been met, entry will not be permitted.
- Unauthorized visitors, and visitors not meeting the specified qualifications, will not be permitted within established controlled work areas.

9.0 SITE CONTROL

9.1 General

The purpose of site control is to minimize potential contamination of workers, protect the public from site hazards, and prevent vandalism. The degree of site control necessary depends on the site characteristics, site size, and the surrounding community.

Controlled work areas will be established at each work location, and if required, will be established directly prior to the work being conducted. Diagrams designating specific controlled work areas will be drawn on site maps, posted in the support vehicle or trailer and discussed during the daily safety meetings. If the site layout changes, the new areas and their potential hazards will be discussed immediately after the changes are made. General examples of zone layouts have been developed for drilling and earth moving activities (e.g., excavating, trenching, drilling) and are attached to this section.

9.2 Controlled Work Areas

Each HAZWOPER controlled work area will consist of the following three zones:

- *Exclusion Zone:* Contaminated work area.
- *Contamination Reduction Zone:* Decontamination area.
- *Support Zone:* Uncontaminated or "clean area" where personnel should not be exposed to hazardous conditions.

Each zone will be periodically monitored in accordance with the air monitoring requirements established in this HASP. The EZ and the Contamination Reduction Zone (CRZ) are considered work areas. The Support Zone (SZ) is accessible to the public (e.g., vendors, inspectors).

9.2.1 Exclusion Zone

The EZ is the area where primary activities occur, such as visual surveys, DGM, and UXO activities. This area must be clearly marked with hazard tape, barricades or cones, or enclosed by fences or ropes. Only personnel involved in work activities, and meeting the requirements specified in the applicable THA and this HASP will be allowed in an EZ. All personnel entering the EZ must be accompanied by a UXO escort. The extent of each area will be sufficient to ensure that personnel located at/beyond its boundaries will not be affected in any substantial way by hazards associated with investigation activities. For this investigation, the EZ will be defined as all areas within a distance no less than 200 feet of the MEC investigation area.

All personnel should be alert to prevent unauthorized, accidental entrance into controlled-access areas (the EZ and CRZ). If such an entry should occur, the trespasser should be immediately escorted outside the area by UXO personnel.

Vegetation Removal. During vegetation removal operations, a distance of no less than 200 feet in all directions will be maintained as an EZ. This zone will be sufficient to accommodate the safe movement of necessary equipment and supplies. Vehicles and other hard barriers should be used where applicable to protect employees and public.

Anomaly Avoidance. Trained UXO Technicians will escort all personnel and subcontractors within the EZ and implement instrument-aided visual survey as part of MEC avoidance procedures. If a potential MEC item is encountered, the team will mark the location of the item and report the item to the installation. The UXO escort will halt escorted personnel in place, select a course around the item, and instruct personnel to follow.

9.2.2 Contamination Reduction Zone

The CRZ is the transition area between the contaminated area and the clean area. Decontamination is the main focus in this area. The decontamination of workers and equipment limits the physical transfer of hazardous substances into the clean area. This area must also be clearly marked and access limited to personnel involved in decontamination.

9.2.3 Support Zone

The SZ is an uncontaminated zone where administrative and other support functions, such as first aid, equipment supply, emergency information, etc., are located. The SZ shall have minimal potential for significant exposure to contaminants (i.e., background levels).

Employees will establish a SZ (if necessary) at the site before the commencement of site activities. The SZ would also serve as the entry point for controlling site access.

9.3 Site Access Documentation

If implemented by the PM, all personnel entering the site shall complete the "Site Entry/Exit Log" located at the site trailer or primary site support vehicle.

9.4 Site Security

Site security is necessary to:

- Prevent the exposure of unauthorized, unprotected people to site hazards.
- Avoid the increased hazards from vandals or persons seeking to abandon other wastes on the site.
- Prevent theft.
- Avoid interference with safe working procedures.

To maintain site security during working hours:

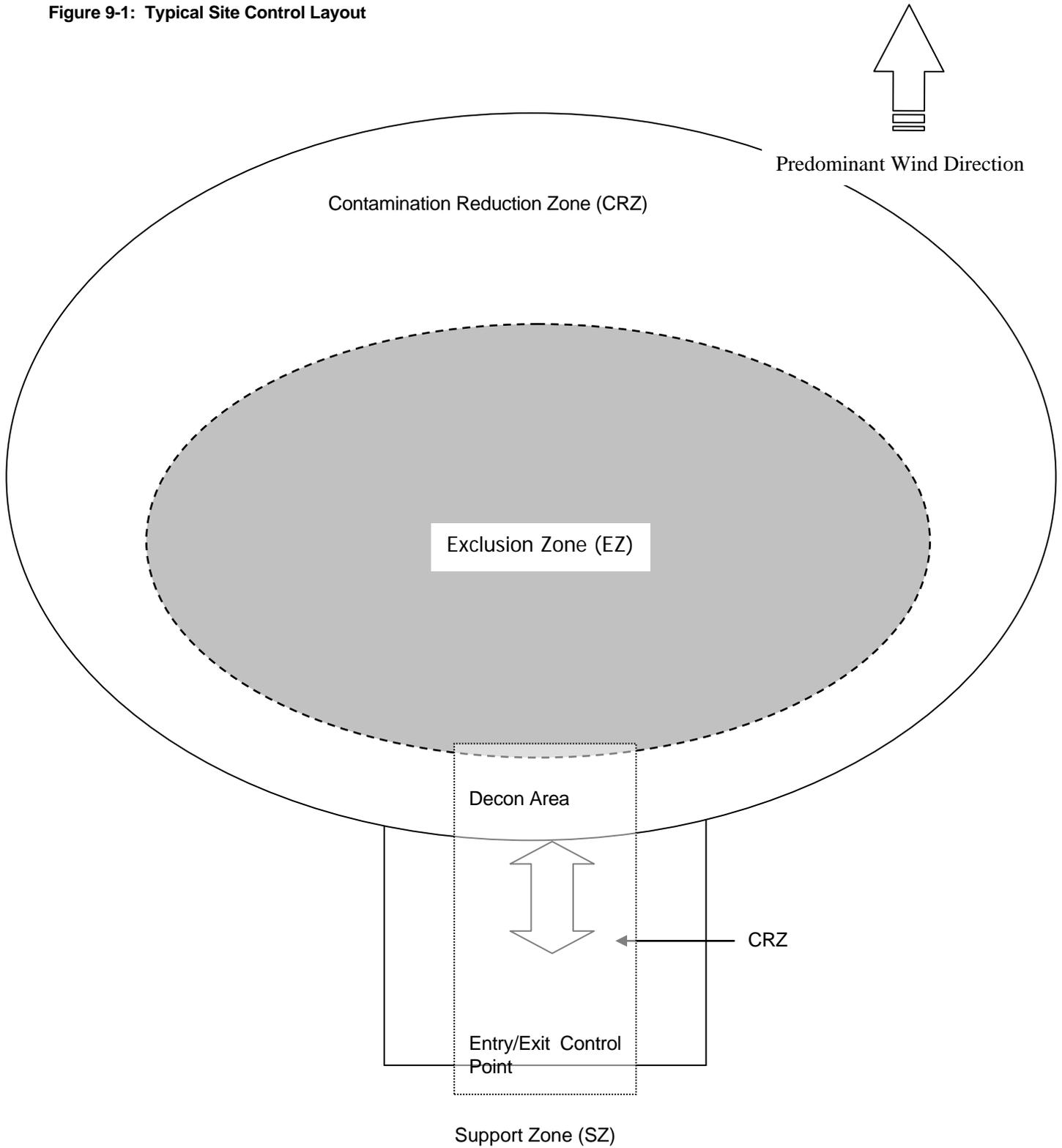
- Maintain security in the SZ and at access control points.
- Establish an identification system to identify authorized persons and limitations to their approved activities.
- Assign responsibility for enforcing authority for entry and exit requirements.
- When feasible, install fencing or other physical barrier around the site.
- If the site is not fenced, post signs around the perimeter and whenever possible, use guards to patrol the perimeter. Guards must be fully apprised of the hazards involved and trained in emergency procedures.
- The PM or Site Supervisor shall approve all visitors to the site. Make sure they have valid purpose for entering the site. Trained site personnel shall accompany visitors at all times and require them to wear the appropriate protective equipment.

To maintain site security during off-duty hours:

- If possible, assign trained, in-house technicians for site surveillance. They will be familiar with the site, the nature of the work, the site's hazards, and respiratory protection techniques.
- If necessary, use security guards to patrol the site boundary. Such personnel may be less expensive than trained technicians, but will be more difficult to train in safety procedures and will be less confident in reacting to problems around hazardous substances.
- Enlist public enforcement agencies, such as the local police department, if the site presents a significant risk to local health and safety.

- Secure the equipment.

Figure 9-1: Typical Site Control Layout



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10.0 EMERGENCY RESPONSE PLANNING

10.1 Emergency Action Plan

Although the potential for an emergency to occur is remote, an emergency action plan has been prepared for this project should such critical situations arise. The only significant type of onsite emergency that may occur is physical injury or illness to a member of the Resolution Consultants team. The Emergency Action Plan (EAP) will be reviewed by all personnel prior to the start of field activities. A test of the EAP will be performed within the first three days of the project field operations. This test will be evaluated and documented in the project records.

Three major categories of emergencies could occur during site operations:

- Illnesses and physical injuries (including injury-causing chemical exposure);
- Catastrophic events (fire, explosion, earthquake, or chemical);
- Workplace Violence, Bomb Threat; and
- Safety equipment problems.

10.1.1 Emergency Coordinator

The duties of the Emergency Coordinator (EC) include:

- Implement the EAP based on the identified emergency condition;
- Notify the appropriate project and SH&E Department personnel of the emergency (**Table 10-1**);
- Verify emergency evacuation routes and muster points are accessible; and
- Conduct routine EAP drills and evaluate compliance with the EAP.

Table 10-1: Emergency Contacts

Emergency Coordinators/Key Personnel			
Name	Title/Workstation	Telephone Number	Mobile Phone
Brian Syme	Client Contact	904-542-6151	256-651-2531
Todd Haverkost	Project Manager	901-372-7962	901-490-7283
TBD	SUXOS and EC	TBD	TBD
TBD	UXOSO	TBD	TBD
John Knopf	Resolution Consultants H&S Manager	(901) 372-7962	(901) 451-1464
Sean Liddy	AECOM District SH&E Manager		443-553-1403
Incident Reporting	AECOM Incident Reporting Line (EnSafe — call John Knopf)	(800) 348-5046	
Eric Hamilton	AECOM TDG/IATA Shipping Expert, Level 1 Shipper		804-357-8109
Kevin Arick	EnSafe TDG/IATA Shipping Expert	901-372-7962	901-356-3525
Organization/Agency			
Name			Telephone Number
Police Department (local)			911
Fire Department (local)			911

Ambulance Service (EMT will determine appropriate hospital for treatment)	911
Emergency Hospital (Use by site personnel is only for emergency cases)	
Lower Keys Medical Center	304-294-5531
5900 College Road, Key West, FL 33040	
Emergency Hospital Route: See Figure 10-1	
WorkCare: 24-hr On-Call Occupational Nurse (Non-Emergency assistance only — Employees must notify SH&E prior to calling)	(800) 455-6155
Poison Control Center	(800) 222-1222
Pollution Emergency	(800) 292-4706
National Response Center	(800) 424-8802
Info-Trac: 24-hr Response Services– Account # 74984	(800) 355-5053
Title 3 Hotline	(800) 424-9346
Public Utilities	
Name	Telephone Number
Call Before You Dig	Sunshine 811 800-432-4770

10.1.2 Site-Specific Emergency Procedures

Prior to the start of site operations, the EC will complete **Table 10-2** with any site-specific information regarding evacuations, muster points, communication, and other site-specific emergency procedures.

Table 10-2: Emergency Planning

Emergency	Evacuation Route	Muster Location
Chemical Spill	Upwind	Site vehicles
Fire/Explosion	Upwind	Site vehicles
Tornado/Severe Weather	Closest available tornado shelter	Building # (TBD by UXOSO)
Lightning	Closest available shelter	Vehicle/Site Trailer
Additional Information		
Communication Procedures	Direct verbal communications, however; must be supplemented anytime voices cannot be clearly perceived above ambient noise levels (e.g., noise from heavy equipment; drilling rigs, backhoes, etc.) and anytime a clear line-of-sight cannot be easily maintained amongst all Resolution Consultants personnel because of distance, terrain or other obstructions. Verbal communications will be adequate to warn employees of hazards associated with the immediate work area. Resolution Consultants personnel will bring a mobile phone to the site to ensure that communications with local emergency responders is maintained, when necessary.	
CPR/First Aid Trained Personnel	One out of every four personnel on site will have CPR/First Aid training as a safety precaution life-saving measure in lieu of accidental injury/exposure or medical condition.	
Site-Specific Spill Response Procedures	Chemicals brought onsite will be limited to fuel for vegetation removal equipment. In the event of a minor spill, sorbent material will be placed on the spill and then transferred to a container for disposal. Field personnel will immediately notify the Site Supervisor who in turn will follow spill reporting procedures.	

10.1.3 Spill Containment Procedure

Work activities may involve the use of hazardous materials (e.g., fuels, solvents) or work involving drums or other containers. State specific spill reporting procedures have been included in **Attachment 8**. If anything beyond these procedures is required, a site specific spill reporting card/procedure must be developed for the site. Procedures outlined below will be used to prevent or contain spills:

- All hazardous material will be stored in appropriate containers.
- Tops/lids will be placed back on containers after use.
- Containers of hazardous materials will be stored appropriately away from moving equipment.
- At least one spill response kit, to include an appropriate empty container, materials to allow for booming or diking the area to minimize the size of the spill, and appropriate clean-up material (e.g., speedy dri) shall be available at each work site (more as needed).
- All hazardous commodities in use (e.g., fuels) shall be properly labeled.
- Containers shall only be lifted using equipment specifically manufactured for that purpose.
- Drums/containers will be secured and handled in a manner which minimizes spillage and reduces the risk of musculoskeletal injuries.

10.1.4 Safety Accident/Incident Reporting

All accidents and incidents that occur on site during any field activity will be promptly reported to the UXOSO and the immediate supervisor. If any Resolution Consultants employee is injured and requires medical treatment, the Site Supervisor will report the incident in accordance with Resolution Consultants' incident reporting procedures. A copy of the final Supervisor's Report of Incident will be provided to the Resolution Consultants Health and Safety Manager or designee before the end of the following shift.

If any employee of a subcontractor is injured, documentation of the incident will be accomplished in accordance with the subcontractor's procedures; however, copies of all documentation (which at a minimum must include the OSHA Form 301 or equivalent) must be provided to the UXOSO within 24 hours after the accident has occurred.

All accidents/incidents will be investigated. Copies of all subcontractor accident investigations will be provided to the UXOSO within five days of the accident/incident.

10.1.5 Environmental Spill/Release Reporting

All environmental spills or releases of hazardous materials (e.g., fuels, solvents, etc.), whether in excess of the Reportable Quantity or not, will be reported according to the sequence identified in the *Site-Specific Spill Reporting Card (if applicable)*. In determining whether a spill or release must be reported to a regulatory agency, the Site Supervisor will assess the quantity of the spill or release and evaluate the reporting criteria against the state-specific reporting requirements, your applicable regulatory permit, and/or client-specific reporting procedures. **If reporting to a US state or Federal regulatory agency is required, Resolution Consultants has 15 minutes from the time of the spill/release to officially report it.**

Figure 10-1: Emergency Occupational Hospital Route/Detail Map



Approximate time: 15 Minutes

	1. Head south on Mustin St toward Fleming Key Rd Restricted usage road About 3 mins	go 1.0 mi total 1.0 mi
	2. Take the 1st left onto Fleming Key Rd Restricted usage road About 47 secs	go 0.3 mi total 1.3 mi
	3. Turn left onto Whiting Ave Restricted usage road About 50 secs	go 0.2 mi total 1.5 mi
	4. Take the 1st left onto Chevalier Ave Restricted usage road	go 0.1 mi total 1.6 mi
	5. Turn right onto Ely St Restricted usage road	go 459 ft total 1.7 mi
	6. Turn left onto Palm Ave	go 407 ft

		total 1.8 mi
7.	Continue onto Palm Avenue Causeway	go 0.4 mi
	About 45 secs	total 2.2 mi
	8. Turn left onto N Roosevelt Blvd	go 2.3 mi
	About 4 mins	total 4.5 mi
	9. Turn left onto N SR-A1A N/U.S. 1 N	go 0.3 mi
	About 1 min	total 4.8 mi
	10. Turn left onto College Rd	go 1.0 mi
	Destination will be on the right	total 5.8 mi
	About 4 mins	

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Attachment 1

Cross-Reference Table

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The following cross-reference table provides information concerning the corresponding elements between the HASP and the accident prevention plan (APP) outline presented in Appendix A of the 2008 United States Army Corps of Engineers (USACE) *Safety and Health Requirements Manual*, EM-385-1-1. The format, content, procedures, and requirements in this HASP are directed solely to meet the onsite needs of Resolution Consultants' field workers and subcontractors who will be performing the work activities addressed in the HASP. Consequently, the document does not address any non site-specific safety performance requirements or programs, except to specify site/task-level site implementation in the work force. Nor does the HASP attempt to duplicate or reproduce any of Resolution Consultants' Corporate Safety, Health, and Environmental (SH&E) Program requirements, or information, except where specifying site-specific implementation needs¹. APP outline elements, which are not site specific, and are only addressed in Resolution Consultants' Corporate SH&E Program (rather than the HASP), are so indicated.

USACE Accident Prevention Plan Requirement	Resolution Consultants' Health and Safety Plan Section
1. SIGNATURE SHEET.	An Approval page is located at the front of the HASP. The CTO manager and health and safety manager provide signed approval of the FINAL (not Draft) version of the HASP.
2. BACKGROUND INFORMATION. List the following:	
a. Contractor	HASP Cover and Section 1.
b. Contract number	HASP Cover and Section 1.
c. Project name	HASP Cover and Section 1.
d. Brief project description, description of work to be performed, and location (map)	HASP Section 2. Information is presented in the Work Plan and will be available on the work site.
e. Contractor accident experience (provide information such as EMR, OSHA 200 Forms, corporate safety trend analyses)	This information is not site/project specific, and hence is not included as part of HASP.
f. Listing of phases of work and hazardous activities requiring activity hazards analyses	HASP Section 2.2.
3. STATEMENT OF SAFETY AND HEALTH POLICY.	HASP Section 1.2.
4. RESPONSIBILITIES AND LINES OF AUTHORITIES.	
a. Identification and accountability of personnel responsible for safety – at both corporate and project level	HASP Section 8.
b. Lines of authority	HASP Section 8.
c. Names of Competent Persons	HASP Section 4.2.1
d. Competent Person Role	HASP Section 4.2.1

¹ Resolution Consultants' Corporate Health and Safety Program documentation was provided to NAVFAC Pacific and accepted as part of the CLEAN Contract award process. Since these Programs are not site-specific they are not included as part of the CTO's work planning document submittals.

USACE Accident Prevention Plan Requirement	Resolution Consultants' Health and Safety Plan Section
e. Requirements for pre-task hazard analysis.	HASP Section 3.5
f. Lines of Authority	HASP Section 8.
g. Non-compliance policies and Procedures	Information not included in HASP. Programmatic level documents/plans.
h. Manager/Supervisor accountability for safety.	HASP Section 8.
5. SUBCONTRACTORS AND SUPPLIERS. Provide the following:	
a. Identification of subcontractors and suppliers (if known)	HASP Executive Summary and Section 2.
b. Means for controlling and coordinating subcontractors and suppliers	HASP Section 8.6
c. Safety responsibilities of subcontractors and suppliers	HASP Section 8.6
6. TRAINING.	
a. List subjects to be discussed with employees in safety indoctrination	HASP Section 4.2
b. List mandatory training and certifications, which are applicable to this project and any requirements for periodic retraining/recertification	HASP Section 4.1 through 4.5
c. Identify requirements for emergency response training (if applicable)	HASP Section 10
d. Outline requirements (who attends, when given, who will conduct etc.) for supervisory and employee safety meetings	HASP Section 4.3
7. SAFETY AND HEALTH INSPECTIONS.	
a. Who will conduct safety inspections, when inspections will be conducted, how the inspections will be recorded, deficiency tracking system, follow-up procedures, etc	HASP Section 8. Resolution Consultants' site audit policies are also part of our Corporate SH&E Program documentation.
b. Any external inspections/certifications which may be required	HASP Section 4.9
8. ACCIDENT REPORTING.	
a. Exposure data (man hours worked).	This information is part of Resolution Consultants' Corporate SH&E Program and are not included in this HASP.
b. Accident investigations, reports, logs.	HASP Section 8, 10.5 and 10.6
c. Requirements for immediate notifications	HASP Section 10.5 and Attachment 6
9. PLANS (PROGRAMS, PROCEDURES) REQUIRED BY THE SAFETY MANUAL (as applicable).	
a. Layout plans (04.A.01)	HASP Section 2 (if applicable)
b. Emergency response plans:	HASP Section 10
- procedures and tests (01.E.01)	HASP Section 10.3
- spill plans (01.E.01, 06.A.02)	HASP Section 10.4 and 10.6

USACE Accident Prevention Plan Requirement	Resolution Consultants' Health and Safety Plan Section
- firefighting plan (01.E.01, Section 19)	Not applicable. Resolution Consultants' policy is to notify professional fire response agencies immediately in the event of fire. Resolution Consultants do not perform fire fighting activities.
- posting of emergency telephone numbers (01.E.05)	HASP Section 10, Table 10-1
- man overboard/abandon ship (19.A.04)	HASP Section 10 (if applicable)
- Medical Support (Section 03.A.02; 03.D)	HASP Section 10.3, Table 10-2
c. Prevention of alcohol and drug abuse (01.C.02)	Information not included in HASP. Programmatic level documents/plans.
d. Site Sanitation Plan (Section 02)	HASP Section 4.7.3
e. Access and haul road plan (4.B)	HASP Section 2 (if applicable)
f. Respiratory protection plan (05.G)	HASP Section 7
g. Health hazard control program (06.A)	HASP Section 5 and individual Task Hazard Analyses presented in Attachment 3.
h. Hazard communication program (06.B.01)	HASP Section 4.4
i. Process Safety Management Plan (06.B.04)	HASP Section 5 (if applicable)
j. Lead abatement plan (06.B.05 & specifications)	Provided as Attachment 9 if applicable.
k. Asbestos abatement plan (06.B.05 & specifications)	Provided as Attachment 9 if applicable.
l. Radiation Safety Program (06.E.03.a)	Provided as Attachment 9 if applicable.
m. Abrasive blasting (06.H.01)	Provided as Attachment 9 if applicable.
n. Heat/Cold Stress Monitoring Plan (06.I.02)	HASP Section 5.3
o. Crystalline Silica Monitoring Plan (assessment) (06.M)	Provided as Attachment 9 if applicable.
p. Night Operations Lighting Plan (07.A.08)	Provided as Attachment 9 if applicable.
q. Fire Prevention Plan (09.A)	HASP Section 10 and individual Task Hazard Analyses presented in Attachment 3.
r. Wild Land Fire Management Plan (09.K)	Provided as Attachment 9 if applicable.
s. Hazardous energy control plan (12.A.01)	HASP Section 3.
t. Critical lift plan (16.H)	Provided as Attachment 9 if applicable.
u. Contingency plan for severe weather (19.A.03)	HASP Section 3.4 and Table 10-2
v. Float Plan (19.F.04)	Provided as Attachment 9 if applicable.
w. Site Specific Fall Protection & Prevention Plan (21.C)	Provided as Attachment 9 if applicable.
x. Demolition plan (to include engineering survey) (23.A.01)	Provided as Attachment 9 if applicable.

USACE Accident Prevention Plan Requirement	Resolution Consultants' Health and Safety Plan Section
y. Excavation/Trenching Plan (25.A.01)	HASP Section 2
z. Emergency rescue (tunneling) (26.A)	HASP Section 10 (if applicable)
aa. Underground construction fire prevention and protection plan (26.D.01)	HASP Section 10 (if applicable)
bb. Compressed air plan (26.I.01)	Provided as Attachment 9 if applicable.
cc. Formwork and shoring erection and removal plans (27.C)	Provided as Attachment 9 if applicable.
dd. Pre-cast concrete plans (27.D)	Provided as Attachment 9 if applicable
ee. Lift slab plans (27.E)	Provided as Attachment 9 if applicable
ff. Steel Erection Plan (27.F.01)	Provided as Attachment 9 if applicable
gg. Site Safety & Health Plan for HTRW Work (28.B)	Refer to HASP, Section 1
hh. Blasting plan (29.A.01)	Provided as Attachment 9 if applicable
ii. Diving plan (30.A.13)	Provided as Attachment 9 if applicable
jj. Confined Space Program (34.A)	HASP Section 4.5 (if applicable)
10. Risk Management Processes	
a. Hazards and Controls outlined in Activity Hazard Analysis for each major phase/activity of work (01.A.13)	HASP Section 3.5. Individual Task Hazard Analyses presented in Attachment 3.

CLEAN Comprehensive Long-Term Environmental Action Navy
 CTO contract task order
 EMR experience modification ratio
 HASP Health and Safety Plan
 IDW investigation derived waste
 OSHA Occupational Safety and Health Administration
 PPE personal protective equipment
 SH&E Safety, Health, and Environment
 SOP standard operating procedure
 USACE United States Army Corps of Engineers

Attachment 2

HASP Revision Table

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Site Health and Safety Plan
NAS Key West Fleming Key Dredge Spoil Area
Revision Table

Revision No.	Revision Date	Approved By (Initials)	Changes, Discussion
01			

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Attachment 3

Task Hazard Analyses

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Task Hazard Analysis (THA)

Activity/Work Task: Anomaly Avoidance	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location: NAS Key West, Fleming Key Dredge Spoil Area	Risk Assessment Code (RAC) Matrix					
Project Number: 60271755	Severity	Probability				
Date Prepared: 8/13/2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Gavin Kitchens, CHMM	Catastrophic	E	E	H	H	M
Reviewed by (Name/Title): Sean Liddy, CSP/John Knopf, CSP	Critical	E	H	H	M	L
	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
Recommended PPE:						
<input checked="" type="checkbox"/> Safety Glasses With Sideshields <input type="checkbox"/> Steel-Toed Boots <input type="checkbox"/> Hard Hat <input type="checkbox"/> Nitrile Gloves <input type="checkbox"/> Leather Gloves <input type="checkbox"/> Hearing Protection <input type="checkbox"/> Flame Retardant Clothing						
Job Steps	Hazards	Controls				RAC
General Hazards	Weather conditions (thunderstorms)	<ul style="list-style-type: none"> Monitor range control radio for weather alerts If able to access internet, track approaching event on local radar If thunder is heard and intervals between are increasing (less than 30 seconds apart), seek shelter in site vehicles 				L
	Heat Stress. Refer to SH&E 511, <i>Heat Stress Prevention</i> , for additional guidance.	<ul style="list-style-type: none"> Implement Heat Stress monitoring. Check pulse and blood pressure in mornings for baseline and throughout day. Follow the established Work/Rest regiment assigned. Drink the appropriate amount of warm fluids on a frequent basis. Refrain from drinking caffeinated beverages. Take breaks in cool areas. Reduce work periods as necessary. If someone exhibits signs of heat stress, remove them from the work site and take to cool (air conditioned) rest area. Immediately notify the SSOH and/or UXOSO. 				

Job Steps	Hazards	Controls	RAC
	Electrical Hazards	<ul style="list-style-type: none"> • All connections to trailer from power drop or generator are to be made by licensed electrician per local code/regulations • If communication lines are via drop, then connections are to be made by authorized representative of comm. company only. • If the use of power tools is needed, ensure generator is properly grounded and use GFCI • Inspect all tools and cords for cuts/abrasions and ensure grounding plug is intact. 	
	Sunburn/Windburn. Refer to SH&E 517, <i>Non-Ionizing Radiation</i> , for additional guidance.	<ul style="list-style-type: none"> • Use sunscreen/barrier cream as necessary. • Dress for the weather. Wear wide brimmed hats and long sleeved shirts 	
	Cuts and Abrasions	<ul style="list-style-type: none"> • Wear work gloves when handling materials. • Gloves must be used and the object inspected for metal slivers, jagged edges, burrs, or rough surface. 	
	Slips, Trips, and Falls	<ul style="list-style-type: none"> • Watch where you step and be aware that sticks, rocks, or other items can be concealed by leaves and grass. • Continually inspect work areas for slip, trip and fall hazards. • Determine best access route before transporting equipment. • Flag inconspicuous holes to protect against fall. • Look before you step and ensure safe and secure footing. • Keep work area free of loose equipment and materials • Avoid routing cords and hoses across pathways. • Wear approved and appropriate work boots with traction soles. 	
	Heavy Lifting	<ul style="list-style-type: none"> • Evaluate the load and when lifting heavy or awkward objects, get help when needed. • Personnel trained in safe lifting techniques (bend knees, straight back, load close to body). • Lifts of 40 lbs or greater requires assistance or mechanical means. • Do not load shovel with more weight than you can handle. • Do not twist body when moving soil with shovel. • Use mechanical lifting devices whenever possible. 	
	Cumulative Trauma Prevention	<ul style="list-style-type: none"> • Supervisors monitor physical activities that stress body's capabilities to ensure they are designed to match worker capability. • Warm-up and stretch prior to commencing work. • Rotate tasks between team members. • Keep hands warm. • Recognize hazards, isolate causative factors, inform and train 	

Job Steps	Hazards	Controls	RAC
		workers.	
	Flying debris, dirt, dust etc.	<ul style="list-style-type: none"> • Wear safety glasses/goggles. • Ensure that eyewash is in proper working condition. 	
	General Medical Considerations	<ul style="list-style-type: none"> • Advise employees to notify supervisor of all prescribed medications in case emergency medical treatment becomes necessary. 	
	Poison Ivy and ticks.	<ul style="list-style-type: none"> • Areas where present will be mapped out by UXOSO and/or SSHO and relayed to teams. • When entering into work areas that contain, upgrade to modified level D PPE and follow all proper decontamination procedures. • Watch for signs of rash within 24-48 hours and report any immediately. • For ticks, use repellent (DEET) or permethrin treated clothing. 	
<p>Escort geophysical personnel and subcontractors in areas where MEC/MPPEH may be present</p> <p>Conduct visual surface sweeps and magnetometer survey of investigation transects.</p> <p>Mark and avoid surface MEC encountered.</p> <p>Escort personnel around the MEC and subsurface anomalies.</p>	Munitions and Explosives of Concern (MEC) and related materials.	<ul style="list-style-type: none"> • Observe all MEC safety precautions and safe work practices. • Only UXO qualified personnel will escort non-UXO personnel. • Direct non-UXO personnel around the surface MEC. • Do not strike or disturb MEC. • Do not place marking devices (pin flags) directly on MEC. • Only qualified personnel will use geophysical instruments. • Do not permit geophysical instrument probes to come in contact with MEC. • Areas where intrusive activities or placement of marking devices will be checked with the geophysical instrument prior to performing tasks. • UXO personnel will not wear steel-toed shoes that may affect geophysical instruments. • UXO personnel will not wear hard-hats unless an overhead hazard exists. Chin straps will be used to secure the hard-hat since a falling hat may initiate MEC. • Post barriers and barricades as necessary prior to commencing operations and maintain positive site control. 	M

Job Steps	Hazards	Controls	RAC
	Explosion, fire, fragmentation, and overpressure.	<ul style="list-style-type: none"> • Determine and establish the Minimum Separation Distance (MSD) based on the Munitions with the Greatest Fragmentation Distance (MFGD). • Fully qualified and trained UXO personnel will escort all workers. • Only those personnel essential to the performance of the sweep will be permitted inside the Exclusion Zone (EZ). • Do not strike or disturb MEC. • Do not permit geophysical instrument probes to come in contact with MEC. • Do not place marking devices (pin flags) directly on anomaly. • Only qualified personnel will use geophysical instruments. • Do not lay the geophysical instrument on the ground near the anomaly. • UXO personnel will not wear boots with metal content that may affect geophysical instruments detection results. • UXO personnel will not wear hard-hats unless an overhead hazard exists. Chin strap will be used to secure hard-hat since a falling hard-hat may initiate MEC. • Make certain that only qualified/authorized personnel are identified and used. Exclude non-essential personnel from the EZ. • Post barriers and barricades as necessary prior to commencing operations and maintain positive site control. • Establish Exclusion Zones based on the MFGD identified for the site. • Use and enforce the buddy system. • Be alert. Cease operations if unsafe conditions arise. • Maintain positive site control; cease operations if unauthorized entry is made. 	
	Unauthorized personnel	<ul style="list-style-type: none"> • Only UXO qualified personnel will escort non-UXO personnel. • Direct non-UXO personnel around the surface MEC. • Only essential personnel will enter EZ. • Maintain positive site control. 	

Chemical Hazards and Monitoring Procedures	
Chemical Hazard(s) (list):	N/A
Applicable HASP Section(s):	9.2.1
Monitoring Instrument(s):	N/A

Additional Safety Considerations
1. Ensure all personnel have read the HASP.

Additional Safety Considerations

2. Maintain good housekeeping practices. When possible, use mechanical equipment to perform lifting of heavy objects. When lifting, follow safe lifting practices. Use the buddy system when lifting.
3. Coordinate with Navy personnel regarding availability of and access to emergency services within the Fleming Key installation.

Additional Operational Safety Procedures	PPE
SH&E 106, Fire Protection SH&E 205, Equipment Inspections & Maintenance SH&E 207, Medical Services and First Aid SH&E 208, Personal Protective Equipment Program SH&E 305, Hand & Power Tools SH&E 307, Housekeeping SH&E 308, Manual Lifting SH&E 313, Wildlife, Plants, and Insects SH&E 406, Overhead Electrical Lines SH&E 417, Underground Utilities SH&E 511, Heat Stress Prevention SH&E 514, Munitions and Explosives of Concern / Unexploded Ordnance	LEVEL D <ul style="list-style-type: none"> • ANSI approved safety glasses • Shirts with sleeves and full-length pants. • Leather boots. • High visibility reflective traffic vest • Leather work gloves • First aid kit (located in vehicle). • Fire extinguisher (located in vehicle).

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
Utility Vehicles	<ul style="list-style-type: none"> • Training Complete. • Familiarity with the vehicle being operated. 	Daily Preventative Maintenance Checks
Communications Equipment	<ul style="list-style-type: none"> • Familiarity with the equipment. • Knowledge of Emergency Response Procedures. 	Daily communications Checks
Fire Extinguishers	<ul style="list-style-type: none"> • Limitations and placement of the extinguishers. • Techniques for the use of the extinguishers. 	Initial and Monthly Serviceability Checks
First Aid Kit(s)	<ul style="list-style-type: none"> • First Aid/CPR training current. • Universal safety precautions for blood borne pathogens. 	Weekly Inspection/Inventory
Hand Tools	<ul style="list-style-type: none"> • Use hand tools for their intended purposes. • Familiarity with the equipment. 	Inspect hand tools for serviceability
	<u>Other Training:</u> <ul style="list-style-type: none"> • Evacuation, Emergency Response and Notifications Procedures IAW HASP. • MEC/MPPEH Hazards and Safety Precautions. • Safe work practices and precautions IAW HASP. • OSHA qualifications and training as 	

required IAW HASP.

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- I will conduct work at this site in accordance with the requirements of the THA.

By signing this form, subcontractors and visitors agree that:

- I have read and understood the potential hazards associated with the site.
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Task Hazard Analysis (THA)

Activity/Work Task: Digital Geophysical Mapping	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location: NAS Key West, Fleming Key Dredge Spoil Area	Risk Assessment Code (RAC) Matrix					
Project Number: 60271755	Severity	Probability				
Date Prepared: 8/13/2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Gavin Kitchens	Catastrophic	E	E	H	H	M
Reviewed by (Name/Title): Sean Liddy, CSP/John Knopf, CSP	Critical	E	H	H	M	L
	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
Recommended PPE:						
<input type="checkbox"/> Safety Glasses With Sideshields <input checked="" type="checkbox"/> Steel-Toed Boots <input type="checkbox"/> Hard Hat <input type="checkbox"/> Nitrile Gloves <input type="checkbox"/> Leather Gloves <input type="checkbox"/> Hearing Protection <input type="checkbox"/> Flame Retardant Clothing						
Job Steps	Hazards	Controls				RAC
General Hazards	Weather conditions (thunderstorms)	<ul style="list-style-type: none"> Monitor range control radio for weather alerts. If able to access internet, track approaching event on local radar. If thunder is heard and intervals between are increasing (less than 30 seconds apart), seek shelter in site vehicles. 				L
	Heat Stress. Refer to SH&E 511, <i>Heat Stress Prevention</i> , for additional guidance.	<ul style="list-style-type: none"> Implement Heat Stress monitoring. Check pulse and blood pressure in mornings for baseline and throughout day. Follow the established Work/Rest regiment assigned. Drink the appropriate amount of warm fluids on a frequent basis. Refrain from drinking caffeinated beverages. Take breaks in cool areas. Reduce work periods as necessary. If someone exhibits signs of heat stress, remove them from the work site and take to cool (air conditioned) rest area. Immediately notify the SSO. 				
	Sunburn/Windburn. Refer to SH&E 517, <i>Non-Ionizing Radiation</i> , for additional guidance.	<ul style="list-style-type: none"> Use sunscreen/barrier cream as necessary. Dress for the weather. Wear wide brimmed hats and long sleeved shirts. 				

Job Steps	Hazards	Controls	RAC
	Slips, Trips, and Falls	<ul style="list-style-type: none"> • Watch where you step and be aware that sticks, rocks, or other items can be concealed by leaves and grass. • Continually inspect work areas for slip, trip and fall hazards. • Determine best access route before transporting equipment. • Flag inconspicuous holes to protect against fall. • Look before you step and ensure safe and secure footing. • Keep work area free of loose equipment and materials • Avoid routing cords and hoses across pathways. • Wear approved and appropriate work boots with traction soles. 	
	Heavy Lifting	<ul style="list-style-type: none"> • Evaluate the load and when lifting heavy or awkward objects, get help when needed. • Personnel trained in safe lifting techniques (bend knees, straight back, load close to body). • Lifts of 40 lbs or greater requires assistance or mechanical means. 	
	Cumulative Trauma Prevention	<ul style="list-style-type: none"> • Supervisors monitor physical activities that stress body's capabilities to ensure they are designed to match worker capability. • Warm-up and stretch prior to commencing work. • Rotate tasks between team members. • Keep hands warm. • Recognize hazards, isolate causative factors, inform and train workers. 	
	General Medical Considerations	<ul style="list-style-type: none"> • Advise employees to notify supervisor of all prescribed medications in case emergency medical treatment becomes necessary. 	
	Chemical substances brought on to the site (i.e. gasoline, paint etc.). Refer to SH&E 507, <i>Hazardous Materials Communication</i> , for additional guidance.	<ul style="list-style-type: none"> • Implement Hazard Communication Program. • MSDS are required for chemical substances brought on site and MSDS made available to the workers. • Label all containers as to contents and dispose of empty containers properly. 	
	Poison Ivy and ticks.	<ul style="list-style-type: none"> • Areas where present will be mapped out by SSO and relayed to teams. • When entering into work areas that contain, upgrade to modified level D PPE and follow all proper decontamination procedures. • Watch for signs of rash within 24-48 hours and report any immediately. • For ticks, use repellent (DEET) or permethrin treated clothing. 	

Job Steps	Hazards	Controls	RAC
DGM operations.	Munitions and Explosives of Concern (MEC).	<ul style="list-style-type: none"> Observe all MEC safety precautions and safe work practices. UXO personnel will conduct MEC avoidance support including escort of non-UXO personnel within site boundaries. UXO personnel will perform instrument-aided visual surveys of the ground surface and mark potential MEC in advance of DGM survey activities. UXO personnel will direct non-UXO personnel around any surface MEC. Do not strike or disturb MEC. Do not place marking devices directly on MEC. UXO personnel will use geophysical instruments to avoid subsurface anomalies prior to intrusive actions such as geophysical test strip installation. Only qualified personnel will use geophysical instruments. Do not permit geophysical instrument probes to come in contact with MEC. UXO personnel will not wear steel-toed shoes that may affect geophysical instruments. UXO personnel will not wear hard-hats unless an overhead hazard exists. Chin straps will be used to secure the hard-hat since a falling hat may initiate MEC. Post barriers or barricades as necessary prior to commencing operations and maintain positive site control. 	M

Chemical Hazards and Monitoring Procedures

Chemical Hazard(s) (list):	N/A
Applicable HASP Section(s):	N/A
Monitoring Instrument(s):	N/A

Additional Safety Considerations

<ol style="list-style-type: none"> Ensure all personnel have read the HASP. Maintain good housekeeping practices. When possible, use mechanical equipment to perform lifting of heavy objects. When lifting, follow safe lifting practices. Use the buddy system when lifting. Coordinate with Navy personnel regarding availability of and access to emergency services within the Fleming Key installation.
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Additional Operational Safety Procedures

Additional Operational Safety Procedures	PPE
SH&E 106, Fire Protection SH&E 205, Equipment Inspections & Maintenance SH&E 207, Medical Services and First Aid SH&E 208, Personal Protective Equipment Program SH&E 305, Hand & Power Tools	LEVEL D <ul style="list-style-type: none"> ANSI approved hard hat ANSI approved safety glasses Shirts with sleeves and full-length pants. ANSI approved steel safety-toe boots or approved equivalent.

SH&E 307, Housekeeping SH&E 308, Manual Lifting SH&E 313, Wildlife, Plants, and Insects SH&E 406, Overhead Electrical Lines SH&E 417, Underground Utilities SH&E 511, Heat Stress Prevention SH&E 514, Munitions and Explosives of Concern / Unexploded Ordnance	<ul style="list-style-type: none"> • High visibility reflective traffic vest • Nitrile Gloves • Leather work gloves • Hearing protection required when around operating machines (85 dBA). • First aid kit (located in vehicle). • Fire extinguisher (located in vehicle).
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Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
Utility Vehicles	<ul style="list-style-type: none"> • Training Complete. • Familiarity with the vehicle being operated. 	Daily Preventative Maintenance Checks
Communications Equipment	<ul style="list-style-type: none"> • Familiarity with the equipment. • Knowledge of Emergency Response Procedures. 	Daily communications Checks
Fire Extinguishers	<ul style="list-style-type: none"> • Limitations and placement of the extinguishers. • Techniques for the use of the extinguishers. 	Initial and Monthly Serviceability Checks
First Aid Kit (s)	<ul style="list-style-type: none"> • First Aid/CPR training current. • Universal safety precautions for blood borne pathogens. 	Weekly Inspection/Inventory
Hand Tools	<ul style="list-style-type: none"> • Use hand tools for their intended purposes. • Familiarity with the equipment. 	Inspect hand tools for serviceability
	<u>Other Training:</u> <ul style="list-style-type: none"> • Evacuation, Emergency Response and Notifications Procedures IAW HASP. • MEC/MPPEH Hazards and Safety Precautions. • Safe work practices and precautions IAW HASP. • OSHA qualifications and training as required IAW HASP. 	

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Task Hazard Analysis (THA)

Activity/Work Task: Land Survey	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location: NAS Key West, Fleming Key Dredge Spoil Area	Risk Assessment Code (RAC) Matrix					
Project Number: 60271755	Severity	Probability				
Date Prepared: 8/13/2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Gavin Kitchens	Catastrophic	E	E	H	H	M
Reviewed by (Name/Title): Sean Liddy, CSP/John Knopf, CSP	Critical	E	H	H	M	L
	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
Recommended PPE:						
<input type="checkbox"/> Safety Glasses With Sideshields <input checked="" type="checkbox"/> Steel-Toed Boots <input type="checkbox"/> Hard Hat <input type="checkbox"/> Nitrile Gloves <input type="checkbox"/> Leather Gloves <input type="checkbox"/> Hearing Protection <input type="checkbox"/> Flame Retardant Clothing						
Job Steps	Hazards	Controls				RAC
General Hazards	Weather conditions (thunderstorms)	<ul style="list-style-type: none"> Monitor range control radio for weather alerts. If able to access internet, track approaching event on local radar. If thunder is heard and intervals between are increasing (less than 30 seconds apart), seek shelter in site vehicles. 				L
	Heat Stress. Refer to SH&E 511, <i>Heat Stress Prevention</i> , for additional guidance.	<ul style="list-style-type: none"> Implement Heat Stress monitoring. Check pulse and blood pressure in mornings for baseline and throughout day. Follow the established Work/Rest regiment assigned. Drink the appropriate amount of warm fluids on a frequent basis. Refrain from drinking caffeinated beverages. Take breaks in cool areas. Reduce work periods as necessary. If someone exhibits signs of heat stress, remove them from the work site and take to cool (air conditioned) rest area. Immediately notify the SSO. 				
	Sunburn/Windburn. Refer to SH&E 517, <i>Non-Ionizing Radiation</i> , for additional guidance.	<ul style="list-style-type: none"> Use sunscreen/barrier cream as necessary. Dress for the weather. Wear wide brimmed hats and long sleeved shirts. 				

Job Steps	Hazards	Controls	RAC
	Slips, Trips, and Falls	<ul style="list-style-type: none"> • Watch where you step and be aware that sticks, rocks, or other items can be concealed by leaves and grass. • Continually inspect work areas for slip, trip and fall hazards. • Determine best access route before transporting equipment. • Flag inconspicuous holes to protect against fall. • Look before you step and ensure safe and secure footing. • Keep work area free of loose equipment and materials • Avoid routing cords and hoses across pathways. • Wear approved and appropriate work boots with traction soles. 	
	Heavy Lifting	<ul style="list-style-type: none"> • Evaluate the load and when lifting heavy or awkward objects, get help when needed. • Personnel trained in safe lifting techniques (bend knees, straight back, load close to body). • Lifts of 40 lbs or greater requires assistance or mechanical means. 	
	Cumulative Trauma Prevention	<ul style="list-style-type: none"> • Supervisors monitor physical activities that stress body's capabilities to ensure they are designed to match worker capability. • Warm-up and stretch prior to commencing work. • Rotate tasks between team members. • Keep hands warm. • Recognize hazards, isolate causative factors, inform and train workers. 	
	General Medical Considerations	<ul style="list-style-type: none"> • Advise employees to notify supervisor of all prescribed medications in case emergency medical treatment becomes necessary. 	
	Chemical substances brought on to the site (i.e. gasoline, paint etc.). Refer to SH&E 507, <i>Hazardous Materials Communication</i> , for additional guidance.	<ul style="list-style-type: none"> • Implement Hazard Communication Program. • MSDS are required for chemical substances brought on site and MSDS made available to the workers. • Label all containers as to contents and dispose of empty containers properly. 	
	Poison Ivy and ticks.	<ul style="list-style-type: none"> • Areas where present will be mapped out by SSO and relayed to teams. • When entering into work areas that contain, upgrade to modified level D PPE and follow all proper decontamination procedures. • Watch for signs of rash within 24-48 hours and report any immediately. • For ticks, use repellent (DEET) or permethrin treated clothing. 	

Job Steps	Hazards	Controls	RAC
Survey operations.	Munitions and Explosives of Concern (MEC).	<ul style="list-style-type: none"> Observe all MEC safety precautions and safe work practices. UXO personnel will conduct MEC avoidance support including escort of non-UXO personnel within site boundaries. UXO personnel will perform instrument-aided visual surveys of the ground surface and mark potential MEC in advance of land survey activities. UXO personnel will direct non-UXO personnel around any surface MEC. Do not strike or disturb MEC. Do not place marking devices directly on MEC. UXO personnel will use geophysical instruments to avoid subsurface anomalies prior to intrusive actions such as survey control point installation. Only qualified personnel will use geophysical instruments. Do not permit geophysical instrument probes to come in contact with MEC. UXO personnel will not wear steel-toed shoes that may affect geophysical instruments. UXO personnel will not wear hard-hats unless an overhead hazard exists. Chin straps will be used to secure the hard-hat since a falling hat may initiate MEC. Post barriers or barricades as necessary prior to commencing operations and maintain positive site control. 	M

Chemical Hazards and Monitoring Procedures

Chemical Hazard(s) (list):	N/A
Applicable HASP Section(s):	N/A
Monitoring Instrument(s):	N/A

Additional Safety Considerations

<ol style="list-style-type: none"> Ensure all personnel have read the HASP. Maintain good housekeeping practices. When possible, use mechanical equipment to perform lifting of heavy objects. When lifting, follow safe lifting practices. Use the buddy system when lifting. Coordinate with Navy personnel regarding availability of and access to emergency services within the Fleming Key installation.
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Additional Operational Safety Procedures

Additional Operational Safety Procedures	PPE
SH&E 106, Fire Protection SH&E 205, Equipment Inspections & Maintenance SH&E 207, Medical Services and First Aid SH&E 208, Personal Protective Equipment Program SH&E 305, Hand & Power Tools	LEVEL D <ul style="list-style-type: none"> ANSI approved hard hat ANSI approved safety glasses Shirts with sleeves and full-length pants. ANSI approved steel safety-toe boots or approved equivalent.

SH&E 307, Housekeeping SH&E 308, Manual Lifting SH&E 313, Wildlife, Plants, and Insects SH&E 406, Overhead Electrical Lines SH&E 417, Underground Utilities SH&E 511, Heat Stress Prevention SH&E 514, Munitions and Explosives of Concern / Unexploded Ordnance	<ul style="list-style-type: none"> • High visibility reflective traffic vest • Nitrile Gloves • Leather work gloves • Hearing protection required when around operating machines (85 dBA). • First aid kit (located in vehicle). • Fire extinguisher (located in vehicle).
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Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
Utility Vehicles	<ul style="list-style-type: none"> • Training Complete. • Familiarity with the vehicle being operated. 	Daily Preventative Maintenance Checks
Communications Equipment	<ul style="list-style-type: none"> • Familiarity with the equipment. • Knowledge of Emergency Response Procedures. 	Daily communications Checks
Fire Extinguishers	<ul style="list-style-type: none"> • Limitations and placement of the extinguishers. • Techniques for the use of the extinguishers. 	Initial and Monthly Serviceability Checks
First Aid Kit (s)	<ul style="list-style-type: none"> • First Aid/CPR training current. • Universal safety precautions for blood borne pathogens. 	Weekly Inspection/Inventory
Hand Tools	<ul style="list-style-type: none"> • Use hand tools for their intended purposes. • Familiarity with the equipment. 	Inspect hand tools for serviceability
	<u>Other Training:</u> <ul style="list-style-type: none"> • Evacuation, Emergency Response and Notifications Procedures IAW HASP. • MEC/MPPEH Hazards and Safety Precautions. • Safe work practices and precautions IAW HASP. • OSHA qualifications and training as required IAW HASP. 	

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Task Hazard Analysis (THA)

Activity/Work Task: Mobilization/Demobilization	Overall Risk Assessment Code (RAC) (Use highest code)	L				
Project Location: NAS Key West, Fleming Key Dredge Spoil Area	Risk Assessment Code (RAC) Matrix					
Project Number: 60271755	Severity	Probability				
Date Prepared: 8/13/2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Gavin Kitchens	Catastrophic	E	E	H	H	M
Reviewed by (Name/Title): Sean Liddy, CSP/John Knopf, CSP	Critical	E	H	H	M	L
	Marginal	H	M	M	L	L
Notes: (Field Notes, Review Comments, etc.)	Negligible	M	L	L	L	L
	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk		
				M = Moderate Risk		
				L = Low Risk		
Recommended PPE:						
<input type="checkbox"/> Safety Glasses With Sideshields <input type="checkbox"/> Steel-Toed Boots <input type="checkbox"/> Hard Hat <input type="checkbox"/> Nitrile Gloves <input type="checkbox"/> Leather Gloves <input type="checkbox"/> Hearing Protection <input type="checkbox"/> Flame Retardant Clothing						
Job Steps	Hazards	Controls				RAC
MOBE - Check the weather.	Unexpected storm – lightning, rain, snow (slip hazard), wind. Heat and cold stress.	Check local weather forecast, have a weather radio for remote sites, observation and communication among team members. Discuss weather issues during tailgate safety meeting. At the first sign of lightning, thunder or strong winds, immediately move away and take shelter. Do not resume work until 30 minutes have passed without signs of storm. Know the symptoms of heat and/or cold stress, and the potential for their occurrence based on expected weather conditions. Take precautions to avoid them. Refer to the HASP or ask your supervisor if you have questions.				L
MOBE - Mobilize with equipment and supplies to site.	Vehicle accident. Accidents caused by use of improper equipment/tools. Injuries caused by improper lifting	Follow safe driving procedures. Always use the buddy system when moving vehicles. Plan your travel path ahead of time. Use maps and known construction zones to make your selection. Consult with the other team members before making any changes to travel path. Use an equipment checklist to verify you have the appropriate equipment/tools for your tasks. Use proper bending/lifting techniques by bending and lifting with				L

Job Steps	Hazards	Controls	RAC
	<p>techniques.</p> <p>Damage to equipment/tools and/or accidents with loose objects.</p>	<p>legs and not with back.</p> <p>Stow all materials in vehicle properly, use appropriate cases and bags. Secure equipment in bed of truck with netting or straps. Do not leave any equipment loose in the cab or bed or the truck. It can cause property damage or serious injuries to others or yourself by falling-off from vehicle.</p>	
<p>Perform perimeter walk around of vehicle for damage or unusual conditions.</p>	<p>Low air pressure, flat tire, blowout, impaired vision, collision, injury or death.</p>	<p>Complete Vehicle Inspection checklist. Assure tires are properly inflated and there is sufficient tread (including spare). Assure there are no cuts or bulges in the sidewalls, all wheels/rims are in good condition. Assure windshield and window glass is clean and free from obstructions. Lift wiper arms and check wiper blades for damage or deterioration. Check to see that all lights work. Check for fluid leaks under vehicle. Check oil, radiator, brake, transmission and washer fluid levels. Check behind vehicle for obstructions.</p>	L
<p>Slowly pull out of parking space.</p>	<p>Collision with other vehicles, pedestrians, or stationary objects.</p>	<p>Release parking brake. Check mirrors and over shoulder in all directions prior to slowly pulling out of parking space. Signal if parallel parked along a street. Use a spotter if available.</p>	L
<p>DURING TRIP - Keep your eyes moving.</p>	<p>Collision, injury or death to occupants or other parties.</p>	<p>DRIVE DEFENSIVELY. Move eyes at least every 2 seconds. Scan major and minor intersections before entry (left-right-left). Check mirrors when slowing or stopping vehicle. Scan mirrors frequently, at least one mirror every 5-8 seconds. Avoid staring while evaluating road conditions. Do not use cell phones or perform other distraction activities while car is in motion. If necessary, pull off the roadway and park prior to performing other activities. Be cautious about the use of cruise control if available on vehicle - never use in inclement weather, within cities and towns, or during hours without daylight.</p>	L
<p>Aim high in steering.</p>	<p>Collision, injury or death to occupants or other parties.</p>	<p>Maintain 12 second eye lead time (1 1/2 blocks in city traffic, 1/4 mile in highway traffic). Assess information from distant objects (i.e., flashers on?). Adjust eye lead distance to speed.</p>	L
<p>MOBE/DEMOBE - Secure equipment in vehicle.</p>	<p>Damage to equipment/tools and/or accidents with loose objects.</p> <p>Pinch points.</p>	<p>Stow all materials in vehicle properly, use appropriate cases and bags. Secure equipment in bed of truck with netting or straps. Do not leave any equipment loose in the cab or bed or the truck. It can cause property damage or serious injuries to others or yourself by falling-off from vehicle.</p> <p>When securing equipment, watch for pinch points. Straps and netting can get caught on objects and snap back as well as trap a finger if hand placement is not correct. Use a buddy to help secure equipment when possible.</p>	L

Job Steps	Hazards	Controls	RAC
Perform perimeter walk around of vehicle for damage or unusual conditions.	Low air pressure, flat tire, blowout, impaired vision, collision, injury or death.	Complete Vehicle Inspection checklist. Assure tires are properly inflated and there is sufficient tread (including spare). Assure there are no cuts or bulges in the sidewalls, all wheels/rims are in good condition. Assure windshield and window glass is clean and free from obstructions. Lift wiper arms and check wiper blades for damage or deterioration. Check to see that all lights work. Check for fluid leaks under vehicle. Check oil, radiator, brake, transmission and washer fluid levels. Check behind vehicle for obstructions.	L
Demobilize from site.	Vehicle accident. Fixed facilities.	Follow safe driving procedures. Always use the buddy system when moving vehicles. Use maps and known construction zones to make your selection. Consult with the other team members before making any changes to travel path. When parked near a fixed facility (building, monitoring well, bollards, etc...) evaluate and plan route prior to mobilization. Use the buddy system when backing-up vehicle.	L

Chemical Hazards and Monitoring Procedures	
Chemical Hazard(s) (list):	NA
Applicable HASP Section(s):	NA
Monitoring Instrument(s):	N/A

Additional Safety Considerations	
1.	No Chemical Hazards anticipated.
2.	Use caution around delivery trucks and stay clear if not involved in spotting operation. Use one person to communicate with driver via hand signals to avoid unnecessary confusion. Watch for overhead utilities. Wear high vis vest at all times.
3.	Maintain eye contact with equipment operator during stone installation and use proper hand signals. Do not approach running equipment unless eye contact is made, and acknowledgment is received from operator.
4.	Stow all materials in vehicle properly, use appropriate cases and bags. Secure equipment in bed of truck with netting or straps. Do not leave any equipment loose in the cab or bed or the truck. It can cause property damage or serious injuries to others or yourself by falling-off from vehicle.
5.	When securing equipment, watch for pinch points. Straps and netting can get caught on objects and snap back as well as trap a finger if hand placement is not correct. Use a buddy to help secure equipment when possible.
6.	Keep clear area around work area, maintain good housekeeping practices. When possible, use mechanical equipment to perform lifting of heavy objects. When lifting, follow safe lifting practices. Use the buddy system when lifting.
7.	Avoid the use of chains for lifting. If necessary, ensure chain is equipped with annual load rating cert and proper hooks being used. For synthetic slings, ensure red warning line is not showing and item is in good condition. For wire ropes, inspect for broken wires (6 in a lay, 3 in a strand).
8.	Keep line of site with co-worker and ensure regular verbal contact. If out of the line of site, ensure radio or cell phone contact is established and maintained.

Additional Operational Safety Procedures	PPE
SH&E 005, Driver Safety Program	LEVEL D

SH&E 313, Wildlife, Plants, and Insects SH&E 517, Non-Ionizing Radiation SH&E 511, Heat Stress Prevention	<ul style="list-style-type: none"> • ANSI approved safety glasses • Shirts with sleeves and full-length pants. • Leather boots. • High visibility reflective traffic vest • Leather work gloves • First aid kit (located in vehicle). • Fire extinguisher (located in vehicle).
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Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
Utility Vehicles	<ul style="list-style-type: none"> • Training Complete. • Familiarity with the vehicle being operated. 	Daily Preventative Maintenance Checks
Communications Equipment	<ul style="list-style-type: none"> • Familiarity with the equipment. • Knowledge of Emergency Response Procedures. 	Daily communications Checks
Fire Extinguishers	<ul style="list-style-type: none"> • Limitations and placement of the extinguishers. • Techniques for the use of the extinguishers. 	Initial and Monthly Serviceability Checks
First Aid Kit (s)	<ul style="list-style-type: none"> • First Aid/CPR training current. • Universal safety precautions for blood borne pathogens. 	Weekly Inspection/Inventory
Hand Tools	<ul style="list-style-type: none"> • Use hand tools for their intended purposes. • Familiarity with the equipment. 	Inspect hand tools for serviceability
	<u>Other Training:</u> <ul style="list-style-type: none"> • Evacuation, Emergency Response and Notifications Procedures IAW HASP. • MEC/MPPEH Hazards and Safety Precautions. • Safe work practices and precautions IAW HASP. • OSHA qualifications and training as required IAW HASP. 	

Acknowledgement

All employees, subcontractors, and visitors must sign the Acknowledgement form, in this section, before conducting field activities at this site.

By signing this form, Resolution Consultants employees agree that:

- I have read this Task Hazard Analysis and I understand the requirements of the THA.
- I will conduct work at this site in accordance with the requirements of the THA.

By signing this form, subcontractors and visitors agree that:

- I have read and understood the potential hazards associated with the site.

- I will ensure compliance with my company's policies on health and safety.

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Task Hazard Analysis (THA)

Activity/Work Task: Vegetation Removal	Overall Risk Assessment Code (RAC) (Use highest code)	M				
Project Location: NAS Key West, Fleming Key Dredge Spoil Area	Risk Assessment Code (RAC) Matrix					
Project Number: 60271755	Severity	Probability				
Date Prepared: 8/13/2012		Frequent	Likely	Occasional	Seldom	Unlikely
Prepared by (Name/Title): Gavin Kitchens	Catastrophic	E	E	H	H	M
Reviewed by (Name/Title): Sean Liddy, CSP/John Knopf, CSP	Critical	E	H	H	M	L
	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L
Notes: (Field Notes, Review Comments, etc.)	Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above)					
	"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.				RAC Chart	
	"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible				E = Extremely High Risk	
	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.				H = High Risk	
Recommended PPE:						
<input checked="" type="checkbox"/> Safety Glasses With Sideshields <input checked="" type="checkbox"/> Steel-Toed Boots <input checked="" type="checkbox"/> Hard Hat <input type="checkbox"/> Nitrile Gloves <input checked="" type="checkbox"/> Leather Gloves <input checked="" type="checkbox"/> Hearing Protection <input type="checkbox"/> Flame Retardant Clothing						
Job Steps	Hazards	Controls				RAC
General Hazards	Weather conditions (thunderstorms)	<ul style="list-style-type: none"> Monitor range control radio for weather alerts. If able to access internet, track approaching event on local radar. If thunder is heard and intervals between are increasing (less than 30 seconds apart), seek shelter in site vehicles. 				L
	Heat Stress. Refer to SH&E 511, <i>Heat Stress Prevention</i> , for additional guidance.	<ul style="list-style-type: none"> Implement Heat Stress monitoring. Check pulse and blood pressure in mornings for baseline and throughout day. Follow the established Work/Rest regiment assigned. Drink the appropriate amount of warm fluids on a frequent basis. Refrain from drinking caffeinated beverages. Take breaks in cool areas. Reduce work periods as necessary. If someone exhibits signs of heat stress, remove them from the work site and take to cool (air conditioned) rest area. Immediately notify the SSO. 				

Job Steps	Hazards	Controls	RAC
	Electrical Hazards	<ul style="list-style-type: none"> • If the use of power tools is needed, ensure generator is properly grounded and use GFCI. • Inspect all tools and cords for cuts/abrasions and ensure grounding plug is intact. 	
	Sunburn/Windburn. Refer to SH&E 517, <i>Non-Ionizing Radiation</i> , for additional guidance.	<ul style="list-style-type: none"> • Use sunscreen/barrier cream as necessary. • Dress for the weather. Wear wide brimmed hats and long sleeved shirts. 	
	Cuts and Abrasions	<ul style="list-style-type: none"> • Wear work gloves when handling materials. • Gloves must be used and the object inspected for metal splinters, jagged edges, burrs, or rough surface. 	
	Slips, Trips, and Falls	<ul style="list-style-type: none"> • Watch where you step and be aware that sticks, rocks, or other items can be concealed by leaves and grass. • Continually inspect work areas for slip, trip and fall hazards. • Determine best access route before transporting equipment. • Flag inconspicuous holes to protect against fall. • Look before you step and ensure safe and secure footing. • Keep work area free of loose equipment and materials • Avoid routing cords and hoses across pathways. • Wear approved and appropriate work boots with traction soles. 	
	Heavy Lifting	<ul style="list-style-type: none"> • Evaluate the load and when lifting heavy or awkward objects, get help when needed. • Personnel trained in safe lifting techniques (bend knees, straight back, load close to body). • Lifts of 40 lbs or greater requires assistance or mechanical means. • Do not load shovel with more weight than you can handle. • Do not twist body when moving soil with shovel. • Use mechanical lifting devices whenever possible. 	
	Cumulative Trauma Prevention	<ul style="list-style-type: none"> • Supervisors monitor physical activities that stress body's capabilities to ensure they are designed to match worker capability. • Warm-up and stretch prior to commencing work. • Rotate tasks between team members. • Keep hands warm. • Recognize hazards, isolate causative factors, inform and train workers. 	
	Flying debris, dirt, dust etc.	<ul style="list-style-type: none"> • Wear safety glasses/goggles. • Ensure that eyewash is in proper working condition. 	

Job Steps	Hazards	Controls	RAC
	General Medical Considerations	<ul style="list-style-type: none"> Advise employees to notify supervisor of all prescribed medications in case emergency medical treatment becomes necessary. 	
	Chemical substances brought on to the site (i.e. gasoline, paint etc.). Refer to SH&E 507, <i>Hazardous Materials Communication</i> , for additional guidance.	<ul style="list-style-type: none"> Implement Hazard Communication Program. MSDS are required for chemical substances brought on site and MSDS made available to the workers. Label all containers as to contents and dispose of empty containers properly. 	
	Poison Ivy and ticks.	<ul style="list-style-type: none"> Areas where present will be mapped out by SSO and relayed to teams. When entering into work areas that contain, upgrade to modified level D PPE and follow all proper decontamination procedures. Watch for signs of rash within 24-48 hours and report any immediately. For ticks, use repellent (DEET) or permethrin treated clothing. 	
Use of power tools/equipment to clear vegetation.	Chain Saw Operation	<ul style="list-style-type: none"> Work in areas clear of surface encumbrances. Watch for stumps. Cut all stumps flat (not at angle) to avoid potential impalement. Use proper PPE including gloves, chaps, helmet with face shield and hearing protection. Use saw in accordance with manufacturers instructions to avoid kick-back potential and saw damage from pinching/pulling. Ensure cuts made in trees to avoid backlash potential and control fall. 	

Job Steps	Hazards	Controls	RAC
	Munitions and Explosives of Concern (MEC).	<ul style="list-style-type: none"> • Observe all MEC safety precautions and safe work practices. • UXO personnel will conduct MEC avoidance support including escort of non-UXO personnel within site boundaries. • UXO personnel will perform instrument-aided visual surveys of the ground surface and mark potential MEC in advance of vegetation removal activities. • UXO personnel will direct non-UXO personnel around any surface MEC. • Do not strike or disturb MEC. • Do not place marking devices directly on MEC. • Only qualified personnel will use geophysical instruments. • Do not permit geophysical instrument probes to come in contact with MEC. • UXO personnel will not wear steel-toed shoes that may affect geophysical instruments. • UXO personnel will not wear hard-hats unless an overhead hazard exists. Chin straps will be used to secure the hard-hat since a falling hat may initiate MEC. • Post barriers or barricades as necessary prior to commencing operations and maintain positive site control. 	M
	Heavy equipment hazards during tractor operations with brush hog attachment.	<ul style="list-style-type: none"> • Wear hard hat, safety glasses, hearing protection, high visibility vests and leather gloves. • Personnel will remain clear of heavy equipment during movement to and around the site. • Keep personnel to a minimum during operations. Only the operator and UXO personnel will be within EZ during operation of heavy equipment. • Only trained and qualified personnel will operate heavy equipment. • Getting on and off heavy equipment during operation is prohibited. Never leave equipment running. • Use of headphones for entertainment purposes (radio, cassette players, and etc.) is prohibited. • Eye contact between operator and spotter will be maintained at all times. Confirmation signal will be obtained prior to approaching equipment. • Reverse signal alarms will be operational on the heavy equipment. • Heavy equipment will be equipped with portable fire extinguisher. • Operators will inform supervisor of any prescribed medication that would impair judgment. 	

Job Steps	Hazards	Controls	RAC
	Roll over	<ul style="list-style-type: none"> • Ensure tractor has roll-over protection structure (ROPS). • Operate equipment up and down slopes whenever possible, with the load on the uphill side. • Do not turn on slopes if possible. • Maintain speed of machine at controllable pace and avoid sudden turns. 	

Chemical Hazards and Monitoring Procedures	
Chemical Hazard(s) (list):	N/A
Applicable HASP Section(s):	N/A
Monitoring Instrument(s):	N/A

Additional Safety Considerations
<ol style="list-style-type: none"> 1. Ensure all personnel have read the HASP. 2. Maintain good housekeeping practices. When possible, use mechanical equipment to perform lifting of heavy objects. When lifting, follow safe lifting practices. Use the buddy system when lifting. 3. Coordinate with Navy personnel regarding availability of and access to emergency services within the Fleming Key installation.

Additional Operational Safety Procedures	PPE
SH&E 106, Fire Protection SH&E 205, Equipment Inspections & Maintenance SH&E 207, Medical Services and First Aid SH&E 208, Personal Protective Equipment Program SH&E 305, Hand & Power Tools SH&E 307, Housekeeping SH&E 308, Manual Lifting SH&E 313, Wildlife, Plants, and Insects SH&E 406, Overhead Electrical Lines SH&E 417, Underground Utilities SH&E 511, Heat Stress Prevention SH&E 514, Munitions and Explosives of Concern / Unexploded Ordnance	LEVEL D <ul style="list-style-type: none"> • ANSI approved hard hat • ANSI approved safety glasses • Shirts with sleeves and full-length pants. • ANSI approved steel safety-toe boots or approved equivalent. • High visibility reflective traffic vest • Nitrile Gloves • Leather work gloves • Hearing protection required when around operating machines (85 dBA). • First aid kit (located in vehicle). • Fire extinguisher (located in vehicle).

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
Utility Vehicles	<ul style="list-style-type: none"> • Training Complete. • Familiarity with the vehicle being operated. 	Daily Preventative Maintenance Checks
Communications Equipment	<ul style="list-style-type: none"> • Familiarity with the equipment. • Knowledge of Emergency Response Procedures. 	Daily communications Checks

Fire Extinguishers	<ul style="list-style-type: none"> • Limitations and placement of the extinguishers. • Techniques for the use of the extinguishers. 	Initial and Monthly Serviceability Checks
First Aid Kit (s)	<ul style="list-style-type: none"> • First Aid/CPR training current. • Universal safety precautions for blood borne pathogens. 	Weekly Inspection/Inventory
Hand Tools	<ul style="list-style-type: none"> • Use hand tools for their intended purposes. • Familiarity with the equipment. 	Inspect hand tools for serviceability
Chain Saws	<ul style="list-style-type: none"> • Familiarity with the equipment 	Inspect saw and chain for serviceability Daily Preventative Maintenance Checks
Heavy Equipment (Tractor)	<ul style="list-style-type: none"> • Training Complete. • Familiarity with the vehicle being operated. • Personnel working adjacent to have awareness level type training. 	Daily Preventative Maintenance Checks
	<u>Other Training:</u> <ul style="list-style-type: none"> • Evacuation, Emergency Response and Notifications Procedures IAW HASP. • MEC/MPPEH Hazards and Safety Precautions. • Safe work practices and precautions IAW HASP. • OSHA qualifications and training as required IAW HASP. 	

Acknowledgement

All employees, subcontractors, and visitors must sign the Acknowledgement form, in this section, before conducting field activities at this site.

By signing this form, Resolution Consultants employees agree that:

- I have read this Task Hazard Analysis and I understand the requirements of the THA.
- I will conduct work at this site in accordance with the requirements of the THA.

By signing this form, subcontractors and visitors agree that:

- I have read and understood the potential hazards associated with the site.
- I will ensure compliance with my company's policies on health and safety.

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Attachment 4

Applicable SH&E SOPs

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5-001-Safe Work Standards and Rules

1.0 Purpose and Scope

- 1.1 Demonstrates Resolution's commitment to the establishment and maintenance of workplaces free from recognized hazards.
- 1.2 This procedure applies to all Resolution based employees and operations.

2.0 Terms and Definitions

- 2.1 **Safety Violation:** Not following verbal or written safety policies, rules and procedures (e.g., guidelines, rules, horse play, failure to wear selected PPE, abuse of selected PPE, etc.).
- 2.2 **Safe Work Practices:** The do's and don'ts about carrying out a task or use of equipment, informing the worker about the hazards present and providing direction on how to safeguard against the hazard. Safe Work Practices are generally guidelines only.
- 2.3 **Safe Job Procedures:** Written step-by-step set of instructions about completing a specific task safely including control measures and responding to emergency situations.

3.0 References

- 3.1 Resolution Employee Handbook

4.0 Procedure

4.1 Standard Operating Procedures (SOPs)

- 4.1.1 Safe Work Practices and Safe Job Procedures are embodied in the SH&E Standard Operating Procedures and are available on Resolution's SH&E website.
- 4.1.2 Specific Safe Work Practices and Safe Job Procedures have been developed in conjunction with employees and with particular input from those who have significant experience.
- 4.1.3 Standard Operating Procedures have been developed to provide clear instruction regarding the safety and reporting requirements of staff and operations.

4.2 Inspections and Audits

- 4.2.1 **Project Managers**, supervisors and **Regional SH&E Managers** shall conduct project audits and office inspections to identify safe work practices and potential safety violations.

4.3 Roles and Responsibilities

- 4.3.1 All managers and supervisors are responsible for compliance with all SOP's and governmental requirements, and will be held responsible to prevent or bring any violations to the attention of the appropriate level of Management for corrective actions as per employing JV partner policies.
- 4.3.2 **Project Managers** (Including field task managers, supervisors) have overall responsibility for implementation of, and compliance with, this procedure.
- 4.3.3 **Regional SH&E Managers** provide guidance as to safe work standards, rules, requirements and guidelines.
- 4.3.4 **Human Resource Managers** (from employing JV partner) provide guidance and direction to managers and supervisors implementing the disciplinary process for safety violations (as defined in the Employee Handbook).
- 4.3.5 **Employees** are responsible for adhering to all Resolution safe work standards, rules, requirements and instructions and to provide input as appropriate.
- 4.4 Any employee who willfully disregards Resolution or client safety standards, rules or requirements is subject to disciplinary action.

5.0 Records

None.

6.0 Attachments

5-001 Safety Rules

5-001-Safety Rules

1.0 Rules for all Employees

- 1.1 Work in a manner that will not put oneself, other personnel or equipment or facilities at risk.
- 1.2 Identify hazardous conditions and activities in the work environment consistent with the job and training.
- 1.3 If a hazard cannot be eliminated, report it to the manager or supervisor promptly.
- 1.4 Implement established control methods consistent with project procedures and/or training.
- 1.5 Cooperate and comply with all Resolution Policies and Standard Operating Procedures.
- 1.6 Immediately report all acts of aggression, verbal or physical threats, assaults, sexual or other harassment to your supervisor or manager.
- 1.7 Take any safety training required for your job function or tasks.
- 1.8 Use or wear all personal protective equipment, devices or clothing required in accordance with manufacturers' instructions and Resolution training and/or procedures.
- 1.9 Do not perform any work task or activity which you believe is unsafe. Inform your supervisor immediately.
- 1.10 Immediately report all incidents (including near misses), injuries, property damage, spills, hazards, safety concerns and safety violations to your supervisor.
- 1.11 Report all observed unsafe acts, conditions, or behaviors that compromise the safety of Resolution employees, its clients, subconsultants, general contractors, or the public to your supervisor.
- 1.12 Keep all personal work areas clean from debris and tripping hazards.
- 1.13 Operate all Resolution vehicles and mobile equipment in accordance with applicable regulations.
- 1.14 Do not use or operate any equipment, machine or device that may endanger you or another worker.
- 1.15 Do not remove, damage, disable or make ineffective any protective safety, fire fighting or first aid equipment or devices.
- 1.16 Use only vehicles, equipment and tools that are in safe operating condition and maintained in accordance with manufacturer's specifications. Report, remove from service, or have repaired, any tool or equipment that is damaged, not working properly or may otherwise be hazardous if used.
- 1.17 Do not use any hand-held wireless device while driving a vehicle or performing other safety critical tasks like working near traffic or working with power tools.
- 1.18 When travelling, working alone or working away from the Resolution office, particularly in remote areas, follow applicable call-in procedures.
- 1.19 Do not bring firearms onto Resolution property or allow them on Resolution projects unless expressed permission is provided by management for the use in wildlife protection.
- 1.20 Do not smoke in areas designated as "NO SMOKING" or in any Resolution facility.
- 1.21 Do not use, sell or distribute, be under the influence, or have in their possession any controlled substances, drugs, or alcohol while performing work duties.

2.0 Project or Field Work

- 2.1 Always report to site supervisor before performing work on site to determine specific requirements for the site or project. Follow all safety requirements, including Resolution's, or that of a client or prime contractor, as applicable.
- 2.2 Use only designated project entrances, parking areas and facilities.
- 2.3 Show or produce evidence of identification or required training if requested to gain entry to or while on a project.
- 2.4 Obey all warning signs (e.g., "Do Not Enter," "Eye, Hearing or Respiratory Protection Required," "Permit Required Confined Space," "Authorized Personnel Only").
- 2.5 Do not block, deface or remove any signage, barricade or fencing without approval.
- 2.6 Keep passageways clean and clear of debris, materials, hoses, cords, and tripping obstructions. Items should be moved to low activity areas or overhead.
- 2.7 Verify with the **Project Manager** that all required Permits are in place prior to commencing work.
- 2.8 Be aware of work going on, around or above you including contractor activities and public motor vehicles.
- 2.9 Do not work alone when performing high risk or remote work.
- 2.10 Personal cameras, video recorders, and other photographic equipment shall not be permitted on site without the **Project Manager** and client's approval.
- 2.11 Plan work tasks before beginning work and consider any hazards that may exist and how to avoid them through safe work practices or safe work procedures.

5-002-Stop Work Authority for Unsafe Work

1.0 Purpose and Scope

- 1.1 This procedure establishes the requirements for Resolution personnel to stop work if they believe there is an imminent safety, health, or environmental risk as described below that will affect them, their co-workers, the public, or the environment.
- 1.2 This procedure applies to all Resolution-based employees and operations.

2.0 Terms and Definitions

- 2.1 **Discrepancy/Deficiency:** An omission or commission, a condition, or a situation that is in conflict with the procedures and requirements of Resolution's SH&E standards.
- 2.2 **Imminent Danger:** An impending or threatening situation that, if left uncorrected, is likely to result in serious injury, property damage, or environmental impairment.
- 2.3 **Potentially Dangerous:** Minor violations that present a low potential for serious injury, property damage, or environmental impairment.
- 2.4 **Stop Work Order:** A directive to cease Resolution-controlled work issued for failure to follow procedures, imminent danger situations/conditions, accumulation of safety violations, etc. The Stop Work Order will apply to Resolution and its direct subcontractors placed at risk by the situations or conditions.

3.0 References

None.

4.0 Procedure

4.1 Roles and Responsibilities

- 4.1.1 **Employees** are responsible for stopping all Resolution-directed work and for bringing it to the attention of the appropriate manager, Site Safety Officer, Project Manager, and/or Contractor representative any time an employee identifies a discrepancy, deficiency, or potentially dangerous condition or act that is likely to cause an unsafe or unhealthy situation or an imminent danger situation.
- 4.1.2 **Employees** may report unsafe working conditions anonymously, but they must provide sufficient detail and promptness to allow Resolution management and the SH&E staff to initiate corrective action.
- 4.1.3 **The Site Safety Officer or Local SH&E Representative** must initiate the development and implementation of corrective actions to eliminate the condition causing the Stop Work Order for Resolution employees and other personnel under Resolution's direct control affected by such condition. Report the details of the Stop Work Order and any corrective actions implemented to the **Project Manager** and the appropriate **Regional SH&E Manager**
- 4.1.4 **Project managers (field task managers, supervisors)**
- Verify that corrective actions taken appropriately address the conditions leading to the Stop Work Order.
 - If Resolution has control over the circumstance that led to the condition, initiate additional corrective actions necessary to correct the conditions leading to the Stop Work Order. Otherwise, remain in communication with the persons or entities that are taking the corrective measures.
 - Communicate such corrective actions and the effects of such corrective actions on the project/office to the client and/or Region Management.

- Ensure that documentation related to the Stop Work Order and corrective actions is placed in the project/office file.

4.1.5 **Regional Business line Managers (regional, district and office managers)**

- Provide support, in accordance with our contractual responsibilities for the project, for the implementation of corrective actions and communications with clients.
- Ensure that no reprimand or reprisal is associated with the initiation of a Stop Work Order.

4.1.6 **Regional SH&E Managers**

- Provide technical guidance for the development and implementation of corrective actions.
- Communicate with the SH&E group and assist with the development of Shared Learning and Safety Alert notices.
- Report all instances when Stop Work Authority has been implemented to the Resolution Consultants SH&E Manager.

4.2 **Commitment**

4.2.1 It is Resolution's policy and firm commitment that employees are expected to stop their work to prevent unacceptable exposure to workplace hazards, including unsafe conditions or worker behaviors, without fear of reprimand or reprisal.

4.2.2 Cases involving reprisal, reprimand, or any attempt to discourage the initiation of Stop Work Orders or reporting of unsafe or unhealthy conditions or situations within Resolution should be immediately reported to the employee's **Manager, Human Resources Representative, and Regional SH&E Manager, Resolution Consultants SH&E Manager.**

4.3 **Authority**

4.3.1 Resolution's stop work authority applies to all work controlled by Resolution, its employees, and Resolution -controlled subcontractor work activities. All Resolution personnel are authorized to stop work in the event of an identified unsafe condition. If the responsible organization fails to provide resolution, or if at any time their acts or failure to act cause substantial harm or imminent danger to the health and safety of project employees, the public, or the environment, Resolution may issue an order stopping work in whole or in part. In the event that Resolution issues a Stop Work Order, an order issued by Resolution Consultants SH&E Manager (or his designee) authorizing the resumption of work must be in place prior to restarting work.

4.3.2 In most cases, a Stop Work Order affects only those areas immediately involved in the hazardous situation. Resolution may issue a Stop Work Order for a portion of the work area(s) or for an entire work area when unacceptable risks exist that cannot be mitigated by reasonable engineering controls, administrative actions, or personal protective equipment. The Stop Work Order will remain in effect until the responsible organization resolves the problem(s) and brings the work area(s) to satisfactory conformance with established SH&E requirements. Work will not resume until appropriate corrective actions have been completed, ensuring that the condition has been rectified. The Stop Work Order will apply to Resolution and its direct subcontractors placed at risk by the situations or conditions.

4.4 **Severity of Hazards**

4.4.1 **Imminent Danger Situations**

- Upon becoming aware of an imminently dangerous situation that Resolution does not control, the employee should immediately inform the persons or entities in control of such imminently dangerous activities and his or her project manager about the situation. If the activities pertain to work that is controlled by Resolution, then the employee may stop the work upon discovering an imminently dangerous situation and then immediately notify his project manager, who may determine the appropriate further action to be taken (including the issuance of a formal Stop Work Order).

- “Stopping work” for Resolution -controlled work includes stabilizing an imminent danger situation to the extent that it can be left unattended for a prolonged period of time until the issue is resolved.
- The person requesting the work stoppage will notify the organization responsible for the work.
- The responsible organization will notify Resolution project/office management immediately of any stop work action(s) taken to rectify the situation.
- An Resolution’s failure to comply with any Stop Work Order in whole or in part may result in disciplinary action. An Resolution subcontractor employee’s failure to comply with any Stop Work Order may result in immediate removal from the project and/or office location.

4.4.2 Potentially Dangerous Situations

- Informal stop work interventions to correct minor conditions (e.g., to remind workers to put on their hard hats, safety glasses, etc.) do not require formal notification.
- If the minor condition cannot be corrected, a formal Stop Work Order must be issued and work must not be resumed until the situation has been eliminated.

4.5 Management-issued Stop Work Orders

4.5.1 **Project Managers** and/or **SH&E Managers** may issue a formal Stop Work Order for Resolution-controlled work in the following situations:

- Imminent danger exists involving the public or employee’s safety and health or damage to the environment, facilities, or property.
- Continuing work or equipment usage will result in significant repair, rework, or removal.
- A project, or any segment of the project, is executed improperly or is out of compliance with applicable regulations or standards.

4.6 Resuming Work

4.6.1 Work associated with the affected area or operation will not resume unless all corrective actions identified in the applicable Stop Work Order have been completed and closed.

4.6.2 All personnel affected by the Stop Work Order will be instructed on the corrective actions and preventative measures taken.

5.0 Records

5.1 The completed Stop Work Order and any corrective action reports generated will be maintained at the project site for the duration of the project and placed in the closed project file.

6.0 Attachments

5-002 Stop Work Order

5-002- Stop Work Order

This form must be completed if any of the following Criteria are met:

1. Imminent danger exists involving the public or employees' safety and health, the environment, facilities, or property.
2. Continuing work or equipment usage will result in significant repair, rework, or removal.
3. There is a discrepancy, deficiency, or potentially dangerous condition or act that is likely to cause an unsafe or unhealthy situation or an imminent danger situation.

Project Name:			
Project Manager:		Project #:	
Reported by:		Date/Time:	
Office:		Address:	
Stop Work Order is the result of the following:			
Inspection/Audit <input type="checkbox"/> Environmental Impairment <input type="checkbox"/> Injury/Incident <input type="checkbox"/> Unsafe Condition <input type="checkbox"/> Unsafe Behavior/Act <input type="checkbox"/> Improper Scope of Work <input type="checkbox"/> Other <input type="checkbox"/>			
Stop Work Order (Describe):			

All Stop Work Orders will be sent to the Regional SH&E Manager for Review

Return to Work

The above Stop Work Order issues/concerns have been corrected and documented. By signing below, I certify that the above Stop Work Order scenario has been corrected and work is safe to resume.

Title	Print Name	Signature
Project Manager:		
Individual/party issuing Stop Work Order:		
Sub-Contractor Supervisor (if applicable):		

5-003-SH&E Training Sign-In Sheet

Course Name:					
Region:		District:			
Business Line:		Dept #:			
Office:		Address:			
Date:		Start Time:		Stop Time:	
Certification Level (Check One): Awareness <input type="checkbox"/> Performance <input type="checkbox"/> Competent Person <input type="checkbox"/>					
Lead Instructor:		Instructor 1:		Instructor 2:	
Employee Name: (PRINT LEGIBLY)		Region/Office Company (if not Resolution)		Employee ID #:	
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5-003-SH&E Training

1.0 Purpose and Scope

- 1.1 Resolution's Safety, Health and Environmental (SH&E) Training Program is designed to provide training for all personnel which address the safety needs of their assigned job duties and responsibilities.
- 1.2 This procedure applies to all Resolution based employees and operations.
- 1.3 Major objectives of the SH&E Training Program include:
 - Identify accountability, responsibility, and authority pertaining to the SH&E training program requirements.
 - Establish minimum training course and/or instructor criteria to ensure compliance with applicable regulatory requirements as well as Resolution's SH&E Program requirements.
 - Define documentation and corresponding archive requirements for the training program.
 - Maintain consistency in SH&E training content throughout North America for Resolution.

2.0 Terms and Definitions

- 2.1 **Training Needs Assessment (TNA):** A documented or electronic selection process whereby each employee identifies SH&E training based on their job role(s), responsibility(s) and associated hazards, and reviews the selected course(s) with his/her supervisor for approval and provision.
- 2.2 **Learning Management System (LMS):** A documented or electronic process of recording the commitment of the TNA and the successful completion of the associated SH&E training material.
- 2.3 **SH&E Administrators:** Employees that are located in various offices who coordinate the staff and/or trainers for delivery of SH&E training and record training completion data into the LMS or maintain hard copy files of training data for the location(s).

3.0 References

None.

4.0 Procedure

The requirements included in this procedure are the minimum applicable for Resolution activities. Further training may be identified to meet local jurisdiction or client requirements.

4.1 Training Needs Assessment

- 4.1.1 For Resolution to provide the necessary SH&E training for all employees to safely perform their work, job hazards that each employee may be exposed to must be identified and appropriate training provided about those hazards.
- 4.1.2 Upon employment and annually thereafter, employees must review their SH&E training requirements by completing the SH&E Training Needs Assessment (TNA) form. Their supervisor will review and confirm these training requirements and confirm enrolment into the required training programs.
- 4.1.3 Training Needs Assessments must be reviewed if any employee has been assigned a significantly different job with new hazards or project reassignment.

4.2 Training Delivery

- 4.2.1 SH&E Training is delivered in several methods to meet Resolution's wide diversity of staff, office and project locations. The local **SH&E Administrator** can work with the **Regional SH&E Manager** to develop a Regional training schedule and appropriate methods of delivery.

- 4.2.2 Every employee must attend the required training to meet the commitment established in the TNA and to demonstrate successful participation and knowledge transfer by completing and passing the associated quizzes or examinations.
- 4.3 **Internal Training**
- 4.3.1 Internal training represents training that is performed by Resolution's internal resources and may include intranet and classroom-based training. Generally this training material is customized to meet the specific requirements of Resolution or the project.
- 4.3.2 Courses that are self-taught and individually paced and delivered via Resolution's intranet: These courses are developed and maintained by the **SH&E Department**. Resolution's intranet will also be used to provide training by an **SH&E Instructor** in a WebEx format to facilitate personnel training based in multiple locations.
- 4.3.3 Courses taught by an Resolution instructor in a classroom format: Trainers are SH&E Department-approved personnel using materials developed specifically to train Resolution employees. All training course curricula is reviewed and approved by the SH&E Department prior to provision of training.
- 4.4 **External Training**
- 4.4.1 External vendors conduct training that is not available through internal training sources. All external vendors are to be selected and pre-approved by the SH&E Department prior to any employee attending a training class.
- 4.4.2 Resolution will use Internet training to supplement internal training courses. All Internet-based safety training courses and providers must be approved by the SH&E Department prior to any employee participating in training. Employees will be provided sign-on privileges.
- 4.5 **Project Specific Training**
- 4.5.1 In the course of employment with Resolution, employees may be asked to participate in project work with activities new to them or activities for which they have let their safety, health or environmental training expire. Should this occur they must immediately inform their supervisor and not participate in any tasks with hazards for which they have not been trained.
- 4.5.2 **Project Managers** must review all employees scheduled to work on their projects for compliance with SH&E training for hazards present or anticipated on their particular project. **Project Managers** must not let any employee that does not have current training for the identified hazards work on their projects.
- 4.6 **Training Tracking**
- 4.6.1 Records documenting employee participation safety training will be maintained in accordance with applicable regulatory and Resolution SH&E Program requirements.
- 4.6.2 Each region/district is responsible for maintaining documentation of course completion by each individual employee. **SH&E Administrators** will generally maintain such documentation.
- 4.6.3 For any employee who cannot be entered into the electronic database i.e.: contract employees, subconsultant employees, client personnel, the District or Office **SH&E Administrator** is required to maintain an individual non-employee training file with hard copies of certification from any safety training records.
- 4.7 **Training Program Management**
- 4.7.1 **Regional SH&E Managers** will be responsible for verifying training vendors, Internet training courses, or any other external training programs used by their operating units to comply with applicable regulatory or legislative requirements and Resolution SH&E Program parameters. Resolution will not consider any training received through an unapproved vendor to be valid until reviewed and accepted by a **Regional SH&E Manager**.
- 4.7.2 Resolution's **SH&E** group may provide training support services (e.g., registration) for Resolution-approved programs in addition to training provided by individual business lines and outside vendors.

4.8 **Roles and Responsibilities**

4.8.1 **Employing JV Partner** is responsible for establishing adequate resources (budget, training staff, etc.) within the business line(s) to implement the identified SH&E training.

4.8.2 **Regional Managers** are responsible for supporting the SH&E training program, and for the implementation and enforcement of this procedure within their region. This includes:

- Allocating resources for the effective implementation of this program.
- Participating with the **Regional SH&E Manager** in the development of tools to identify, track and monitor the implementation of SH&E training.

4.8.3 **Project Managers** (including field task managers, supervisors) are responsible that all assigned personnel comply with the requirements of this program. They will also:

- Identify local **SH&E Administrators** to coordinate SH&E training and to handle the training program data for their district/department.
- Confirm that training requirements are reviewed with each employee, based upon anticipated hazards associated with current and probable job functions and past performance if the job has not changed.
- Confirm that a SH&E TNA is completed by each employee and their supervisor as part of an employee's new hire orientation and upon annual review.
- Identify supplemental employee training courses based on local/client requirements.
- Identify additional employee SH&E training requirements based upon prudent risk management considerations and local performance issues.
- Implement corrective actions when employees fail to meet training requirements.

4.8.4 **Resolution Consultants SH&E Manager** is responsible for the following:

- Establishing SH&E Training Program parameters and communicating same to corporate executive management.
- Providing the necessary tools, support, and staff for development of the SH&E training program.
- Developing a list and schedule of training courses, including routine recurring training for standard courses.
- Reporting/communicating training status to senior management.

4.8.5 **SH&E Group** is responsible for the following:

- Developing and maintaining the LMS.
- Developing a list and schedule of training courses, including routine recurring training for standard courses. Communicating such information accordingly.
- Developing a resource of Resolution on-line, vendor or classroom training materials.
- Developing a roster of approved SH&E courses and syllabi.
- Collaborating with the **Regional SH&E Managers** in course development and content.
- Auditing for compliance with training program parameters.
- Reporting the status of the SH&E Training Program to the **Group SH&E Director** and **Regional SH&E Managers**.

4.8.6 **Regional SH&E Manager** is responsible for the following:

- Working with Regional and Business Line management to verify all SH&E training needs are identified and captured in the LMS.
- Developing a schedule and performing internal safety training classes as requested by regional, district, office or **Project Managers**.
- Reviewing and approving qualifications of Resolution employees providing internal safety training.

- Approving training lesson plans and course agendas for all internal training courses.
- Approving external safety training vendors and on-line (Internet) training providers.
- Monitoring for compliance with training program requirements.

4.8.7 **SH&E Administrators** are responsible for the following:

- Inputting and maintaining records pertaining to all safety training courses, medical monitoring, and other safety events into the LMS.
- Assigning training courses to employees, based on approved TNA results.
- Maintaining a hardcopy file of employee training records, sign-in sheets and other SH&E records related to training (such as quizzes and course evaluations where available).
- Supporting employees in obtaining refresher training prior to expiration.
- Providing office, department, location or business lines managers training compliance reports at an interval agreed upon by manager.

4.8.8 **Employees** are responsible for the following:

- Reviewing with their supervisor the SH&E hazards they may be exposed to in their day-to-day functions, and requesting the training for that hazard by completing a SH&E TNA.
- Coordinating with their supervisor to take the required SH&E training course prior to performing tasks with identified hazards.
- Monitoring their own training expiration dates and coordinating with their local **SH&E Administrator** (and supervisor) for refresher training to prevent expiration of any required training certifications.
- Supplying copies of training completion certificates to the **SH&E Administrator** for inclusion in the LMS.

5.0 Records

None.

6.0 Attachments

6.1 5-003-SH&E Training Sign In Sheet

5-202-Competent Person Designation Form

Company:			
Project Location:		Job Number:	
Designated Competent Person:		ID Number:	
Check the technical activity for which the Designation will apply:			
<input type="checkbox"/> Asbestos <input type="checkbox"/> Blasting & Explosives <input type="checkbox"/> Concrete & Masonry Construction <input type="checkbox"/> Confined Space Entry <input type="checkbox"/> Control of Hazardous Energy (Lockout/Tagout) <input type="checkbox"/> Cranes & Derricks <input type="checkbox"/> Demolition <input type="checkbox"/> Electrical Wiring Design & Protections <input type="checkbox"/> Fall Protection <input type="checkbox"/> Hearing Protection <input type="checkbox"/> Heavy Equipment		<input type="checkbox"/> Ionizing Radiation <input type="checkbox"/> Lead <input type="checkbox"/> Material Hoists & Personnel Hoists <input type="checkbox"/> Stairways & Ladders <input type="checkbox"/> Respiratory Protection <input type="checkbox"/> Rigging Equipment <input type="checkbox"/> Scaffolds <input type="checkbox"/> Steel Erection <input type="checkbox"/> Trench & Excavations <input type="checkbox"/> Underground Construction <input type="checkbox"/> Welding & Cutting	
Other (Explain):			
<p>The Resolution employee identified has been designated as the Competent Person in the technical area specified, and by the Project Manager identified. This designation is based on the following:</p> <ol style="list-style-type: none"> The Project Manager is authorizing the competent person to allocate whatever resources that are necessary to perform tasks associated with the area of competency to provide a safe work environment and comply with applicable regulatory and legislative requirements, and Resolution SH&E procedures and policies. The Project Manager has confirmed that the individual is competent to perform the required tasks by way of: <ol style="list-style-type: none"> Documented training Practical experience (hands-on) Documented professional experience 			
Print name and sign below			
Designated by: _____		Date: _____	
(Resolution Project Manager)			
Designated by: _____		Date: _____	
(Resolution Regional SH&E Manager or Designee)			
Comments:			

Attach any related documentation of training, certifications, insurance coverages, or other related information that supports the designation of the person as Competent.

5-202-Competent Person Designation

1.0 Purpose and Scope

- 1.1 Outlines the process and minimum requirements necessary for classifying an Resolution employee as a “Competent Person” in one or more activity areas.
- 1.2 This procedure applies to all Resolution based employees and operations where Resolution is self-performing the identified activities and where Resolution controls projects performing the activities requiring a Competent Person. Client-mandated requirements may apply on a project-specific basis and shall be addressed in supplemental documents (e.g., Task Hazard Analysis or Health and Safety Plan).
- 1.3 It is recognized that regulations and legislation may contain alternate definitions for Competent Person and it will be the responsibility of the **Project Manager** to determine if conflicts exist between Resolution and applicable regulatory/legislative definitions and resolve the conflict.
- 1.4 When a qualified employee within Resolution is not available to be designated as the Resolution Competent Person, the **Project Manager** in coordination with their **Regional SH&E Manager** may designate an appropriately qualified and trained Contractor employee as the Competent Person for the project.

2.0 Terms and Definitions

- 2.1 **Competent Person:** One who is capable of identifying existing and predictable hazards in surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization and resources to take prompt corrective measures to eliminate them.
- 2.2 **HASP:** Project Health and Safety Plan.

3.0 References

None.

4.0 Procedure

- 4.1 The following activities require an individual to be designated as a competent person:
 - 4.1.1 Asbestos
 - 4.1.2 Blasting & Explosives
 - 4.1.3 Concrete & Masonry Construction
 - 4.1.4 Confined Spaces
 - 4.1.5 Control of Hazardous Energy (Lockout-Tagout)
 - 4.1.6 Cranes & Derricks
 - 4.1.7 Demolition
 - 4.1.8 Electrical Wiring Design & Protections
 - 4.1.9 Fall Protection
 - 4.1.10 Hearing Protection
 - 4.1.11 Heavy Equipment
 - 4.1.12 Ionizing Radiation
 - 4.1.13 Lead

- 4.1.14 Material Hoists & Personnel Hoists
- 4.1.15 Stairways & Ladders
- 4.1.16 Respiratory Protection
- 4.1.17 Rigging Equipment
- 4.1.18 Scaffolds
- 4.1.19 Steel Erection
- 4.1.20 Trench & Excavations
- 4.1.21 Underground Construction
- 4.1.22 Welding & Cutting
- 4.2 The Resolution competent person field functions are dependent on the project activities and Resolution's field function. Refer to each SH&E Standard Operating Procedure (SOP) for the activities listed above and the associated legislative (e.g., OSHA) standard to determine the details of responsibility. Generally, it is the Competent Person's responsibility to be onsite at all times when Resolution staff are performing work governed by this SOP, make daily inspections of the conditions and work activities, and take actions to control any hazards associated with those activities.
- 4.3 The *5-202-Competent Person Designation* shall be used on all projects for documenting Competent Person designations. It must be filled out completely and updated as necessary by the contractor.
- 4.4 **Roles and Responsibilities**
 - 4.4.1 A Competent Person in Resolution is an employee who functions in a technical role when either Resolution self-performs associated field work (above) or oversees and directs the work of subcontractors. For operations where Resolution is providing oversight of subcontractors (ex. drilling services), it is the subcontractors employee who is the Competent Person on-site for that phase of operation.
 - 4.4.1.1 Any Resolution employee considered for designation as a "Competent Person" shall:
 - Complete a Training Needs Assessment (TNA) with their Supervisor under the guidance of the **Regional SH&E Manager**, regarding competent person's requirements;
 - Obtain approval from their supervisor prior to enrolling in any Resolution-sponsored safety competent person training program.
 - Track his or her own training anniversary dates and arrange for appropriate refresher training at least 30 days prior to expiration of certification
 - 4.4.1.2 Contractor Competent Persons
 - Unless Resolution is self-performing, the Contractor is responsible for determining the safe means and methods of its work activities.
 - The Contractor is responsible for designating its Competent Person(s) for each category of work it undertakes as required above.
 - The Contractor's Competent Person is responsible for technically supporting the Contractor's site operations for the safe execution of its activities.
 - The Contractor's Competent Person should be knowledgeable about the work activities, compliance with the associated safety and health regulations, identifying and removing any attendant field hazards and the Contractor's work practices and procedures.
 - For work on Resolution controlled sites, the **Project Manager** confirms that the Contractor designates a Competent Person(s) for its activities. *5-202-Competent Person Designation* or the equivalent may be use for this purpose.

- 4.4.2 **Project Manager/Field Task Manager/Supervisor** are responsible for ensuring that all assigned personnel, including personnel utilized from other offices to support their operations, comply with the requirements of this procedure. The **Project Manager** shall:
- Designate the Competent Person based on the work activity using 5-202- *Competent Person Designation*;
 - Implement corrective actions when employees fail to meet training requirements;
 - Identify supplemental employee training needs based on local/client requirements;
 - Verify competent person training requirements are reviewed with each employee, based upon current and anticipated job functions and past performance on a routine basis;
 - Identify additional employees requiring competent person training based on this procedure;
 - For projects controlled by Resolution, when these activities are contracted to another party, secure the identity of the Contractor's Competent Person(s), provide them with a copy of this SOP to verify the Contractor's capability to comply with the requirements within, and obtain documentation to support the designation of the Contractor employee as a Competent Person for Resolution;
 - Verify the designation of the Competent Person for a specific activity is effectively communicated to field personnel on site during daily tailgate safety meetings.
- 4.4.3 The **Regional SH&E Manager** or designee will work with operations to assess the competency of all designated persons based on specific requirements outlined in this procedure. With the **Project Manager** or designee determining the work-specific Competent Person, the **Regional SH&E Manager** provides guidance as needed. The SH&E Department (i.e., **Regional SH&E Manager**) with operations is responsible for:
- Establishing competent person training/experience requirements and communicating these requirements to line management.
 - Monitoring the overall implementation of this SOP.
 - Monitoring field compliance of this procedure.
 - Providing technical assistance/support as requested by **Regional and District Managers**.
 - Performing internal safety training classes as requested by **Regional and District Managers**.
 - Supporting the **Project Manager** in establishing minimum competent person requirements for regulated job activities based on individual job descriptions, applicable regulatory requirements, operational considerations, and management directives.
 - Reviewing and approving as requested by designated operations representatives the Competent Person's qualifications for Resolution employees.
 - Develop and maintain a process to track employee training compliance and anniversary dates.

5.0 Records

- 5.1 Resolution Competent Person Designation forms shall be maintained in the project file.
- 5.2 Documentation as to daily inspections and corrective measures by the Resolution Competent Person shall be maintained in the project file.

6.0 Attachments

- 6.1 5-202-Competent Person Designation Form

5-208-Personal Protective Equipment Program

1.0 Purpose and Scope

- 1.1 Provide an effective Personal Protective Equipment (PPE) Program to protect Resolution employees from potential workplace safety and health hazards.
- 1.2 This procedure applies to all Resolution employees and operations.
- 1.3 The proper use of appropriate PPE, in combination with effective engineering and administrative controls, can provide Resolution employees with protection against potential workplace hazards and can reduce the potential for workplace injury and illness.

2.0 Terms and Definitions

- 2.1 **PPE:** Personal Protective Equipment
- 2.2 **ANSI:** American National Standards Institute

3.0 References

- 3.1 Occupational Safety and Health Administration (OSHA) PPE standard (29 CFR 1910.132) requires Resolution to assess workplace(s) to determine if hazards that necessitate the use of PPE exist in the workplace, and, if such hazards are present, to
 - 3.1.1 Select the appropriate types of PPE and
 - 3.1.2 Provide employees with training about the use and care of the selected PPE.

4.0 Procedure

4.1 Roles and Responsibilities

4.1.1 Regional SH&E Professional

- Provide guidance to Project Managers, Field Task Managers, Supervisors, and field staff on the assessment of hazards and the selection of PPE.
- Provide training materials to Project Managers, Field Task Managers and Supervisors for employee training.

4.1.2 Project Managers (Field Task Managers, Supervisors)

- Conduct Hazard Assessments to identify hazards present and to specify PPE appropriate for those hazards.
- Determine which of your staff members will require employee-issued PPE.
- Approve the purchase of company-issued PPE.
- Verify that appropriate PPE is utilized by your employees when required or necessary.

4.1.3 Employee

- In accordance with your training and instructions, utilize appropriate PPE that has been issued to them when required or necessary.
- Inspect your PPE prior to use to confirm that it is functional, and maintain your PPE in a clean and functional condition.
- Follow instructions and manufacturers' guidance on the care, use, and storage of your PPE.
- Prior to using any type of PPE, confirm that it is in good shape, free of dirt and debris, and that you are familiar with its correct use. Always make sure PPE fits adequately to perform the use intended.
- Refrain from wearing PPE outside of the work area for which it is required if doing so would constitute a hazard.

4.2 Hazard Assessment for Office Locations

Office Hazard Analysis will be completed for applicable tasks as required in 29 CFR 1910.132 following the guidelines as specified in OSHA Pamphlet 3151-12R 2003 (Personal Protective Equipment),

4.3 Hazard Assessment for Off-Site Locations

4.3.1 HAZWOPER Locations

- Each Health and Safety Plan (HASP) that is prepared for waste site investigations/remediation includes a hazard assessment for each proposed field activity. Task-specific PPE requirements are listed in the HASP. Therefore, the HASP will serve as the certificate of hazard assessment for each project that involves off-site work activities that require the use of PPE.

4.3.2 All Other Off-Site Locations

- The Task Hazard Analysis will serve as the certificate of hazard assessment for projects that involves offsite work activities that require the use of PPE. The checklist will be reviewed with the entire field team prior to arriving at the site.

4.4 Training

4.4.1 Staff will receive adequate instruction on the correct use, limitations, and assigned maintenance duties for the equipment to be used. The following information, at a minimum, will be covered during PPE training:

- What PPE is required.
- When it is required.
- Why it is required.
- How to properly don, doff, adjust, and wear the PPE described.
- The limitations of the PPE, including its expected useful life.
- How to properly care for, maintain, and dispose of the PPE.

4.4.2 Field staff are responsible for confirming that they have reviewed the operation manual for the PPE before work commences.

4.4.3 All staff will receive an orientation to the hazards on the job site as well as initial Field Safety orientation that outlines appropriate PPE requirements.

4.4.4 Resolution Consultants employees who have participated in the 40-hour HAZWOPER training course are considered to have met the employee training requirements of the PPE standard. The training certificates that are issued as documentation of successful completion of the 40-hour HAZWOPER course will also serve as documentation of training as required by the PPE standard. Employees who have not participated in the HAZWOPER training will be provided PPE training specific to your assignment and/or location. The PPE Facts Sheets (attached) can serve as the basis for training.

4.5 Determining the Need for PPE

4.5.1 Using the Task Hazard Assessment or HASP, the need for the following types of PPE will be evaluated.

4.5.2 PPE will:

- Be selected and used in accordance with recognized standards and provide effective protection.
- Not in itself create a hazard to the wearer.
- Be compatible, so that one item of PPE does not make another item ineffective.
- Be maintained in good working order and in a sanitary condition.

- 4.5.3 Prior to entering any regulated work area, confirm that you have access to or are equipped with the following CSA-approved PPE, appropriate to the site hazards:
- Head Protection
 - Eye & Face Protection
 - Foot Protection
 - Hi-Visibility Vests
 - Hearing Protection
- 4.5.4 After the hazard assessments have been completed, the Project Manager will select the appropriate PPE for each job category or task, as necessary. The selected equipment will be indicated on the hazard assessment. PPE will be provided to each employee appropriate for the hazards present. All PPE selected and purchased by Resolution will meet or exceed the American National Standards Institute (ANSI) standards, Canadian Standards Association (CSA) standards, or other standards as dictated by provincial, territorial, or state legislation.
- 4.6 **Eye and Face Protection**
- 4.6.1 The OSHA standard requires that Resolution employees use appropriate eye and face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acid and caustic liquids, chemical gases or vapors, and injurious light radiation. The standard further requires that eye protection provide side protection when there is a hazard from flying objects.
- 4.7 **Head Protection**
- 4.7.1 Protective helmets (hard hats) are required when employees are working in areas where there is a potential for falling objects to cause injury to the head. When working near exposed electrical conductors that could contact the head, helmets designed to reduce electrical shock will be worn.
- 4.8 **Foot Protection**
- 4.8.1 Protective footwear is required when employees are working in areas where there is a danger of foot injuries from falling and rolling objects or from objects piercing the sole and where an employee's feet are exposed to electrical hazards.
- 4.9 **Hand Protection**
- 4.9.1 Appropriate hand protection is required when employee's hands are exposed to hazards such as those from skin absorption of harmful substances, severe cuts and lacerations, severe abrasions, punctures, chemical burns, thermal burns, or harmful temperature extremes.
- 4.9.2 Chemically Resistant Clothing
- 4.9.3 Chemically resistant clothing is required when there is significant potential for the employee to come in direct contact with the chemicals he/she is handling. Tasks that involve chemical handling will be evaluated for the potential of splashing or spilling.
- 4.9.4 High-Visibility Apparel
- 4.9.5 High-visibility apparel with reflective banding (ANSI Class II and III garment) is required for all field activities in close proximity to moving traffic and other modes of transportation (transit, airlines, marine, etc.), in proximity to heavy equipment operations, or whenever otherwise specified in a project HASP. Color of apparel (orange or lime) may be client/project-specific.
- 4.10 **Personal Clothing**
- 4.10.1 For personal safety on the job site, do not wear
- Loose or unsecured clothing or loose fitting cuffs.
 - Greasy or oily clothing, gloves, or boots.
 - Torn or ragged clothing.

- 4.10.2 Neck chains are hazardous and will be worn under clothing so that they do not hang out. Long hair will be tied back or otherwise confined.
- 4.10.3 Clothing made of synthetic fibres can be readily ignited and melted by electric flash or extreme heat sources. Cotton or wool fabrics are recommended for general use.
- 4.11 **Specialized PPE**
- 4.11.1 In addition to basic PPE, additional specialized PPE may be required to provide appropriate protection to the employee. Refer to applicable OH&S legislation and related Standard Operating Procedures for additional information on PPE requirements.
- Fall Protection: Only full body harnesses with shock-absorbing lanyards will be used for personal fall arrest.
 - Respiratory Protection: Respiratory protection shall be selected based on the contaminant and concentration to which the employee will be exposed. Refer to 5-519 *Respiratory Protection Program* and the task- or project-specific Baseline Hazard Assessments for specific requirements.
 - Fire Resistant Clothing: Approved fire resistant outer clothing may be required at work locations with flammable or explosive materials or environments.
 - Other Head Protection: Operators and passengers (if permitted) of all terrain vehicles and snowmobiles will wear approved helmets.
 - Chemical Protective Clothing: Approved chemical protection appropriate to the hazard will be worn. Review applicable Material Safety Data Sheets (MSDSs) for appropriate PPE.
 - Protection from Drowning: Employees being transported by boat are required to wear life jackets. Employees exposed to any other drowning hazards are required to wear personal flotation devices. Life jackets and personal flotation devices will have the proper regulatory approval.
- 4.12 **PPE Supplies**
- 4.12.1 Each Resolution office will maintain a supply of safety equipment including safety glasses, gloves, and chemically resistant clothing based on the nature of their field activities. The Office Manager or designee will be responsible for maintaining this inventory. PPE that is required for large field efforts will be ordered by the Project Manager or their designee.
- 4.12.2 At a minimum, the office will review its PPE program annually.
- 4.13 **Obtaining Personalized Safety Gear**
- 4.13.1 The OSHA standard in 29 CFR 1910 - Subpart I / 29 CFR 1926 requires that protective equipment, including PPE for eyes, face, head, and extremities, protective clothing, and respiratory devices, be provided to employees wherever necessary by reason of hazards.
- 4.13.2 Employees are not expected to provide their own general PPE. Although each Resolution office stocks and issues various general issue safety gear such as hard hats, plain safety glasses, disposable gloves and coveralls, fall protection, and hearing protection, certain personalized safety gear such as prescription safety glasses, safety-toed (capped) boots, and cotton coveralls will be ordered and sized specifically for the user.
- 4.13.3 Most PPE will be provided to the employee at no charge, with the exception of the above personalized safety equipment (safety glasses, safety toed boots, washable coveralls). A partial cost reimbursement to the employee may be made based on legacy company practice or project stipulations.
- 4.13.4 Prescription Safety Glasses
- As with all hazards, staff will be notified of their potential for injury and will be provided with the appropriate PPE. If wearing contact lenses poses a hazard to the worker's eyes during work, the worker will be advised of the hazards and the alternatives to wearing contact lenses.
 - Eligibility

- Employees will wear safety glasses during activities that involve exposure to eye hazards such as flying particles, chemical splash, or certain types of radiation such as ultraviolet light from welding operations. Typically, the following types of field activities will require the use of safety glasses:
 - Site investigation or remediation and construction activities.
 - Stack monitoring and other types of air emissions monitoring.
 - Audits and assessments in industrial or manufacturing facilities.
 - Activities conducted within laboratories.
 - Activities at client facilities where safety glasses are required.
- Eligibility to obtain prescription safety glasses will be determined by the employee's supervisor based upon the guidance above.
- Procurement of Prescription Safety Glasses
 - Except for eye examinations, associated prescription eyewear costs will be paid by Resolution. The employee may be asked to pay an optician's dispensing fee, which may be submitted on an expense report for reimbursement. Because eye examinations are not covered, employees who have had recent eye examinations should contact the eye care professional in advance to determine their procedure for handling a current prescription.
 - Employees who are eligible will be allowed to order one pair of prescription safety glasses every other year from the selection of glasses offered by the program.
 - Contact the Regional SH&E Professional for guidance on the procurement of prescription safety glasses.

4.13.5 Safety Toed Boots/Shoes

- Eligibility
 - Employees will wear safety boots/shoes during activities that pose the potential for foot injury from dropped objects or penetrations through the sole. Typically, safety toed boots/shoes will be required for the same type of activities, with the exception of laboratory activities, for which safety glasses are required. In addition, work around all types of heavy equipment will typically require the use of safety shoes.
 - Eligibility to obtain safety shoes will be determined by the employee's supervisor based upon the guidance above.
- Procurement of Safety Shoes
 - Eligible employees will be allowed to purchase one pair of safety shoes every other year.
 - Employees who have been authorized to purchase safety shoes by their supervisor should consult the Regional SH&E Manager for obtaining for detailed instructions on how and where to purchase the equipment. The style chosen (i.e., boot or shoe) should be determined based upon the application. For example, low cut shoes may be appropriate for audits and assessments in light industry applications, while safety boots will be more appropriate for environmental remediation, construction, and heavy industry work with significant foot hazards. Before purchasing, the employee is required to verify that the safety boots or shoes meet the specifications above.
 - After the purchase, an employee expense report, including a dated receipt for the shoes, should be submitted for approval and reimbursement. Resolution will reimburse the employee up to a amount that is specified by the SH&E Department or Regional Operations management.

4.13.6 Reusable Coveralls

- Eligibility

- Reusable cotton (or some other washable fabric) coveralls may be made available to employees who regularly perform field work based on conditions. Coveralls can be worn over personal clothing to help protect and keep them clean.
- Eligibility to obtain washable coveralls will be determined by the employee's supervisor based upon the guidance above.

5.0 Records

None.

6.0 Attachments

None.

5-213-Subcontractors

1.0 Purpose and Scope

- 1.1 Provides a process through which Resolution Subcontractors are evaluated to determine if the use of that Subcontractor will pose an unacceptable risk to Resolution and/or its clients, employees, equipment, or property.
- 1.2 This policy applies to all Resolution North America based operations.

2.0 Terms and Definitions

- 2.1 **Subcontractor:** Any contractor or organization procured to provide direct services for, or in support of, an Resolution managed activity or operation. This is inclusive of any Resolution managed activity or operation that requires the physical presence of that contractor at the location to conduct the contracted service. Examples include, but are not limited to:
- Heavy equipment operations
 - Surveying
 - Construction/renovation/clean-construction operations
 - Demolition
 - Well abandonment
 - Electrical system installation/service
 - HAZWOPER Activities
- 2.2 **Resolution field site:** A site at which Resolution is providing field-related services.

3.0 References

None.

4.0 Procedure

4.1 Subcontractor Selection Requirements

- 4.1.1 For all subcontractors, the selection process will include consideration of the candidate firms' SH&E management and performance indicators.
- 4.1.2 Subcontractor bids/submittals shall include a completed Subcontractor SH&E Evaluation. Each questionnaire will be evaluated during the subcontractor selection process to identify any organizations whose past SH&E performance may disqualify them from selection.
- 4.1.3 Prior to the start of their on-site operations, the selected subcontractor firms are required to provide copies of any SH&E documentation (e.g., insurance carrier supplied Experience Modification Rates documents, insurance certificates, safety plan, manual of safety procedures, employee training/medical monitoring certifications) to the Project Manager and/or subcontractor selection manager.
- 4.1.4 Although the questionnaire is to be used as a guideline to determine whether a bidder's safety and health record is acceptable, there are no simple pass/fail criteria. The guidance outlines the standards Resolution's JV Partner's SH&E Department has established to reflect performance acceptability. Marginal performance (Score is less than 3) will require evaluation for final approval of a subcontractor by the PM in coordination with the SH&E Department. Priority will be given to subcontractors who have obtained certification standards (e.g., OHSAS 18001; Certificate of Recognition).

- 4.2 **Procurement Phase.** Prior to starting fieldwork, each subcontractor organization shall provide the Resolution Project Manager (or Resolution representative) with at least one of the following for review and acceptance:
- 4.2.1 Site-specific SH&E documentation addressing specific performance requirements for the subcontractor's on-site work activities, site safety coordinator's name and responsible persons; or
- 4.2.2 A written statement of adoption of the provisions in Resolution's project SH&E documentation as the subcontractor's minimum procedures while working on the job site. This documentation must be in letter format (company letterhead), and must include the following information:
- Site location
 - Anticipated scope of work activities to be performed and equipment to be used by the subcontractor
 - Name of the subcontractor's Site Safety Officer, with contact phone numbers
 - Name of the subcontractor's Health and Safety Manager, with contact phone numbers
 - In addition to the subcontractor's own SH&E requirements, a statement adopting the Resolution's project SH&E documentation as the subcontractor's minimum requirements for the project
 - Statement requiring that only qualified and trained personnel (to the level of assigned responsibilities) will perform assigned work activities on the site
 - Designation of required personal protective equipment anticipated for the subcontractor's assigned work activities
 - Copies of supplemental or additional subcontractor-specific provisions, policies, procedures and/or protocols that will be implemented by the subcontractor during site activities
- 4.3 **On-Site Subcontractor SH&E Requirements**
- 4.3.1 Subcontractor organizations are responsible for safely performing their assigned work activities in accordance with all applicable federal and state/provincial/territorial occupational safety and health regulations, acts, and codes.
- 4.3.2 Subcontractors are responsible for providing Resolution with a copy of their project-specific SH&E documentation for the subject work. The specification of minimum acceptable on-site SH&E performance should be included.
- 4.3.3 Subcontractors are responsible for confirming that their employees are provided the appropriate equipment and training to perform the work safely.
- 4.3.4 All subcontractors must provide input to, and be orientated to, the hazards associated with the site and activities of the project.
- 4.3.5 All subcontractors must provide proof of safety training as required for the hazards identified, inclusive of any required medical surveillance documentation.
- 4.3.6 Subcontractors will be provided with a copy of Resolution's project-specific SH&E documentation for the specification of minimum acceptable on-site SH&E performance.
- 4.3.7 If at any time the subcontractor obtains the services of another subcontractor, consultant, or lower tier subcontractor for any portion of the work to be performed, a copy of the Statement of Work and the approved project-specific SH&E documentation shall be provided as part of the package submitted to each respective subcontractor, consultant, or lower-tier subcontractor. Prior to the start of work, the subcontractor shall submit in writing to the PM, subcontractor selection manager, or their designee the names of any lower-tier subcontractors that may be used in the project that have yet to be approved. The start of work is conditional upon this approval.
- 4.4 **Roles and Responsibilities**
- 4.4.1 **Regional Management** is responsible for:

- Providing the resources to implement the subcontractor evaluation process.
- Maintaining all subcontractor SH&E performance data (developing and managing a database recommended).

4.4.2 **Project Managers** are responsible for confirming that all subcontractors have been properly evaluated for SH&E performance and potential risk. This includes:

- Communicating the requirements established in this procedure to the subcontractor and providing them with the Subcontractor SH&E Evaluation form.
- Reviewing the completed subcontractor evaluation and confirming their potential risk prior to the start of work.
- Providing a completed evaluation to the project file and the administrator or database manager in their region.
- Verifying a subcontractor's minimum level of insurance coverage as stipulated by Resolution's Legal and Procurement Departments (Workers' Compensation, Auto Insurance, General Liability, etc.).

4.4.3 **Regional SH&E Manager** is responsible for:

- Providing support to the project managers in understanding the subcontractor evaluation process and requirements.

5.0 Records

5.1 Business Line management will maintain subcontractor evaluations and associated documentation either in the project file, or, preferably, in a centralized database for tracking.

6.0 Attachments

5-213-Subcontractor SH&E Evaluation

5-305- Hand and Power Tools

1.0 Purpose and Scope

- 1.1 This procedure provides Resolution Consultants' requirements for all manually-operated hand and power tools and equipment use, handling and storage.
- 1.2 Applies to all Resolution Consultants staff and field worksites.

2.0 Terms and Definitions

None.

3.0 References

- 3.1 5-305-Hand and Power Tools
- 3.2 5-410-Hazardous Energy Control
- 3.3 5-302-Electrical, General
- 3.4 5-208-Personal Protective Equipment Program
- 3.5 5-510-Hearing Conservation Program

4.0 Procedure

4.1 Roles and Responsibilities

- 4.1.1 **Project Manager (Field Task Manager, Supervisor)** Each Manager/Supervisor must ensure that all aspects of this procedure are followed and adhered to on all Resolution Consultants projects, sites and locations. If a specific tool is not included in this work instruction section of this SOP, appropriate guidelines shall be established prior to work associated with that equipment, including following manufacturer's recommendations.
- 4.1.2 **Regional SH&E Professionals** provides technical guidance and support as to this procedure.
- 4.1.3 **Employees** shall not work with any tool that they are not familiar with without first obtaining training associated with that equipment. In addition, employees must following manufacturer's recommendations for its use and must not modify the equipment without first obtaining authorization from the manufacturer..

4.2 Restrictions

- 4.2.1 No employee shall use any hand tool, unless they are familiar with the use and operation of the equipment or have received specific instruction on its use and operation.
- 4.2.2 All tools will be used in accordance with manufacturer's specifications. Personnel involved in the performance of certain activities will not be permitted to smoke, eat, drink, or use smokeless tobacco, except during breaks (e.g., HAZWOPER-controlled work areas).

4.3 Training

- 4.3.1 Instruction in the proper use, safe handling, and maintenance of tools will be provided to employees unfamiliar with the tool.

4.4 Personal Protective Equipment

- 4.4.1 Lockout devices (padlocks, multiple lock hasps, tags), gloves appropriate to the task, safety-toed boots, as required, hard hats and eye & face protection, as required.

4.5 Inspections

4.5.1 All tools must be inspected prior to each use. Any tool that is defective or has missing parts must not be used. Every broken or defective tool must be tagged or identified as such. Tagged tools will be returned to your supervisor for repair or replacement. Tagged tools will be immediately removed from service.

4.5.2 All tools must be inspected to manufacture's specifications according to tool rests and guard adjustment tolerances. All tools will be inspected to ascertain that all safety devices are present and functioning properly.

5.0 Records

None.

6.0 Attachments

None.

7.0 Records

None.

8.0 Attachments

None.

5-307 Housekeeping, Worksite

1.0 Purpose and Scope

- 1.1 This procedure provides Resolution Consultants' work practices as well as personal hygiene and work site sanitation standards for housekeeping.
- 1.2 Applies to all Resolution Consultants staff and field worksites.

2.0 Terms and Definitions

None.

3.0 References

None.

4.0 Procedure

4.1 Roles and Responsibilities

- 4.1.1 **Project Manager (Field Task Manager, Supervisor)** is responsible for the procedure's implementation and the details of addressing housekeeping policy within the construction/demolition worksite.
- 4.1.2 **SH&E Professionals** will monitor, assess, and report on project housekeeping when visiting locations.
- 4.1.3 Employees are responsible for reporting any areas of concern to the Site Supervisor for prompt resolution as well as for maintaining worksites that are free from debris, clutter, and slipping or tripping hazards.

4.2 Smoking, Eating, and Drinking

- 4.2.1 Eating and drinking will be permitted in designated areas at Resolution Consultant project sites and as specified on client sites. Smoking will be permitted only in areas designated in compliance with applicable local laws, regulations, legislation, and ordinances, by the Field Supervisor and situated in locations that are not in the immediate vicinity of activities associated with work site activities. Additionally, Field Supervisor will designate each smoking area giving primary consideration to those personnel who do not smoke.
- 4.2.2 Personnel involved in the performance of certain activities will not be permitted to smoke, eat, drink, or use smokeless tobacco, except during breaks (e.g., HAZWOPER-controlled work areas).
- 4.2.3 Site personnel will first wash hands and face after completing work activities and prior to eating or drinking.

4.3 Water Supply

- 4.3.1 Water supplies will be available for use on site and will comply with the following requirements:
- 4.3.2 **Potable Water:** An adequate supply of drinking water will be available for site personnel consumption. Potable water can be provided in the form of approved well or city water, bottled water, or drinking fountains. Where drinking fountains are not available, individual use cups will be provided as well as adequate disposal containers. Potable water containers will be properly identified and tape sealed in order to distinguish them from nonpotable water sources and protect the potable water integrity.
- 4.3.3 **Nonpotable Water:** Nonpotable water will not be used for drinking purposes. Nonpotable water may not be used for hand washing or other personal hygiene activities but may be used for other types of cleaning activities. All containers/supplies of nonpotable water used will be properly identified and labeled as such.

4.4 Toilet Facilities

- 4.4.1 Toilet facilities will be available for site personnel and visitors. Should subcontractor personnel be located on-site for extended periods, it may become necessary to obtain temporary toilet facilities.

Exceptions to this requirement will apply to mobile crews where work activities and locations permit transportation to nearby toilet facilities.

4.4.2 A minimum of one toilet will be provided for every 20 site personnel, with separate toilets maintained for each sex, except where there are less than five total personnel on site. For mobile crews where work activities and locations permit use of nearby toilet facilities (e.g., gas station, or rest stop), on-site facilities are not required.

4.4.3 Washing Facilities

4.4.4 Hand and Face: Site personnel will wash hands and face after completing work activities and prior to breaks, lunch, or completion of workday.

4.4.5 Personal Cleaning Supplies: Cleaning supplies at Resolution Consultant project sites will consist of soap, water, and disposable paper towels or items of equal use/application (e.g., anti-bacterial gels, wipes, etc.).

4.5 **Clothing and Personal Protective Equipment (PPE)**

4.5.1 All PPE will be kept clean at all times and maintained in accordance with the manufacturer's, Resolution Consultant's, and applicable regulatory, legislative, or provincial requirements.

4.5.2 General Work Areas

4.5.3 At all times work areas will be kept free of dirt and debris that may impact the safety of site personnel and visitors. All trash receptacles will be emptied regularly.

4.5.4 Break Areas and Lunchrooms

Site personnel will observe the following requirements when using break areas and lunchrooms at Resolution Consultant project sites:

4.5.5 All food and drink items will be properly stored when not in use.

4.5.6 Food items will not be stored in personal lockers for extended periods in order to prevent the potential for vermin infestation.

4.5.7 Perishable foods will be refrigerated whenever possible.

4.5.8 All waste food containers will be discarded in trash receptacles.

4.5.9 All tables, chairs, counters, sinks, and similar surfaces will be kept clean and free of dirt, waste food, and food containers at all times.

4.5.10 Refrigerators used to store food items will be maintained at 45 degrees Fahrenheit and emptied of all unclaimed food items weekly. Refrigerators used to store food will be labeled as such so that only food and drinks are stored within the refrigerator.

4.5.11 Routine cleaning of refrigerators will also be performed on a regular basis.

4.6 **Vermin Control**

4.6.1 Every enclosed workplace shall be constructed, equipped, and maintained, so far as reasonably practicable, to prevent the entrance or harborage of rodents, insects, and other vermin.

4.6.2 A continuing and effective extermination program shall be instituted where the presence of rodents, insects, or other vermin is detected.

4.7 **General Housekeeping**

4.7.1 All work areas shall be kept clean to the extent that the nature of the work allows.

4.7.2 Every work area shall be maintained, so far as practicable, in a dry condition. Where wet processes are used, drainage shall be maintained and platforms, mats, or other dry standing places shall be provided, where practicable, or appropriate waterproof footwear shall be provided.

4.7.3 Protruding objects or placement of materials on paths or foot traffic areas present a problem with regard to slips, trips, falls, and puncture wounds. Personnel will use a reasonable amount of effort to keep slip, trip, and fall hazards to a minimum.

- 4.7.4 Excess debris and trash will be collected and stored in an appropriate container (e.g., plastic trash bags, garbage can, roll-off bin) prior to disposal.
- 4.7.5 At no time will debris or trash be intermingled with waste PPE or contaminated materials.
- 4.7.6 Material and equipment must be placed, stacked, or stored in a stable and secure manner. Stacked material or containers must be stabilized as necessary by interlocking, strapping, or other effective means of restraint to protect the safety of workers.
- 4.7.7 An area in which material may be dropped, dumped, or spilled must be guarded to prevent inadvertent entry by workers or protected by adequate covers and guarding.
- 4.7.8 Floors, platforms, ramps, stairs, and walkways available for use by workers must be maintained in a state of good repair and kept free of slipping and tripping hazards. If such areas are taken out of service, the employer must take reasonable means for preventing entry or use.
- 4.7.9 Hazardous areas not intended to be accessible to workers must be secured by locked doors or equivalent means of security and must not be entered unless safe work procedures are developed and followed.

4.8 Worksite Offices and Trailers

Worksite offices and trailers will be maintained in accordance with *RC-103-Housekeeping, Office*.

5.0 Records

None.

6.0 Attachments

None.

5-308-Manual Lifting, Field

1.0 Purpose and Scope

- 1.1 This procedure provides the requirements for use when performing manual materials handling activities (e.g., lifting/handling of items or materials).
- 1.2 This procedure applies to all field staff for Resolution Consultants operations.

2.0 Terms and Definitions

- 2.1 **Manual Materials Handling:** Moving or handling things by lifting, lowering, pushing, pulling, carrying, holding, or restraining.
- 2.2 **Team Handling:** Team handling occurs when more than one person is involved during the lift.

3.0 References

- 3.1 OSHA Technical Manual: http://www.osha.gov/dts/osta/otm/otm_vii/otm_vii_1.html
- 3.3 National Safety Council: www.nsc.org

4.0 Procedure

4.1 Roles and Responsibilities

- 4.1.1 The **Project Manager** will effectively implement the procedure, providing resources as required, and providing direction on proper lifting/handling techniques.
- 4.1.2 The **Resolution Consultants Health and Safety Manager** will assist in identifying activities with a high potential for lifting/handling strains/injuries as well as the associated mitigation strategies and training on proper lifting/manual materials handling techniques.
- 4.1.3 **Employees** are responsible for reviewing and following *5-308- Manual Lifting Safe Work Practices*.

4.2 Mechanical Controls

- 4.2.1 Mechanical equipment or assistance such as dollies, carts, come-alongs, or rollers are preferable to be used whenever possible rather than the employee physically moving materials.
- 4.2.2 Mechanical assistance will be of proper size, have wheels sized for the terrain, and be designed to prevent pinching or undue stress on wrists.
- 4.2.3 Objects to be moved will be secured to prevent falling and properly balanced to prevent tipping.

4.3 Administrative Controls

- 4.4 When significant, sustained lifting work is required, it is desirable to rotate employees to spread the work load among several people and thereby avoid fatigue.
- 4.5 Rotation is not simply performing a different job but instead is performing a job that utilizes a completely different muscle group from the ones that have been overexerted.

5.0 Records

None.

6.0 Attachments

None.

5-313-Alligators

1.0 Hazard

- 1.1 Your chance of encountering an alligator is greatest during the animal's courtship and mating season, which takes place from March through September. This is when male alligators become most dominant and aggressive as they try to intimidate rival males and attract females by their show of power. Some males end up having to travel to find a mate. July through September is when mother alligators are guarding nests.
- 1.2 Mating season takes up much of the warmer months - a very popular time in the southeastern USA for outdoor activities - and alligators are solar-powered, so-to-speak. The warmth from the sun fires up their metabolism, giving them renewed energy; and renewed energy means great potential for conflict.

2.0 Encounter

- 2.1 The alligator is naturally wary of humans, and will flee quickly if you get too close to it, or it may utter a very audible and compelling warning hiss. In some cases; however, alligators may charge or attack. Here are some examples of such cases:
 - 2.1.1 An alligator that is accustomed to being fed by humans may not be so shy.
 - 2.1.2 An alligator that is surprised and alarmed by your approach may attack, thinking that it is being attacked itself.
 - 2.1.3 A mother alligator caring for her nest or for live babies. If you see alligator babies, or if you encounter a nest (usually a mound of vegetation mixed with mud), remove yourself to a safe distance, the mother alligator is sure to be close by. If you get close, the mother may sound a very audible and intimidating warning hiss. Such a nest may be difficult to identify for a non-expert, but it is likely the mother will issue you a warning.
 - 2.1.4 Alligator mothers are well-known to be practically fearless when defending their offspring, whether the little ones have hatched or not. A mother alligator was observed leaping, jaws agape, to attack a helicopter as it approached the nest area to land! (The helicopter carried biologists studying alligator nests.)
- 2.2 Also be careful near heavy vegetation in or near the water's edge. This is where an alligator likes to enjoy privacy and peace during the daylight hours. If you trudge through there and surprise it, the outcome may not be positive.
- 2.3 Generally, a good minimum distance to keep between you and an alligator or nest is 15 feet/ 4.6 meters.
- 2.4 When trying to get past an alligator, make sure not to walk between the alligator and the water, because if it's spooked, it's going to run to the water.
- 2.5 If an alligator does approach in a threatening manner, make as much noise and movement as possible. This should show the alligator that he has taken on more than he can handle and he'll back away.



3.0 Alligator Charge

- 3.1 The alligator is not a natural runner. Those short legs obviously don't serve it like a horse's legs do, and the alligator can actually tire out in a relatively short time. When it charges after a human or animal, it is either trying to scare it away or seize it. It has a fast and furious burst of energy which

serves it well for stealth hunting -- grabbing prey when it doesn't expect it. Furthermore, the reptile is opportunistic, which means, quite simply, it doesn't like to work very hard to get its food if it doesn't have to.

- 3.2 In the very rare event you are charged or chased by an alligator, move in as straight a line as possible away from it as fast as you reasonably can. In many cases, the vegetation features of the wild will serve to protect you by slowing the alligator down, like trees, bumps, bushes, etc. -- your comparatively long legs usually make it easier for you to maneuver through the trees and brush than an alligator's short legs do.
- 3.3 Most adult humans can outrun even a fast crocodylian, which has been clocked at a maximum of about 10 mph/17 kilometers per hour (kph), compared to a human speed of 15-17 mph/24-27 kph. But this doesn't matter much; an alligator will often give up the chase because it sees that the runner is moving away too quickly, and realizes that too much effort will be required to continue pursuit.
- 3.4 You may have heard somewhere that the zigzag run (running in a "z" pattern, side-to-side) is a good idea, but this is not only an unnecessary maneuver but probably a very unwise one. Here's why:
 - 3.4.1 Unless you're an Olympic athlete, running zigzag over natural topography increases your risk of tripping and falling over rocks, plants, roots, and the like. And it goes without saying that falling while being pursued by an alligator is not good.
 - 3.4.2 Furthermore, an alligator doesn't have the degree of stereoscopic vision we have. It actually has a small 'blind spot' directly in front of it. Hence, the alligator's vision is most effective in the 'sides' of its field of view. So, running zigzag not only slows your rate of distance from your pursuer, it may clearly indicate to the animal exactly where you are; even this point hardly matters since in many cases the alligator may keep its eyes shut while pursuing so as not to get them hit by twigs, grass stalks and branches in its path.
 - 3.4.3 Finally, an alligator bites very effectively in a side-swiping motion, so if you are trying to run zigzag and are slowed down by plants, rocks, or other obstacles, the backwards flying leg of a running human is an optimal target for side-swiping, chomping jaws (the operative word here is "side").
- 3.5 Simply put, when faced with an attack, move directly away from the alligator as quickly as possible, navigating the terrain as carefully as possible. The zigzag idea will likely not serve you well.

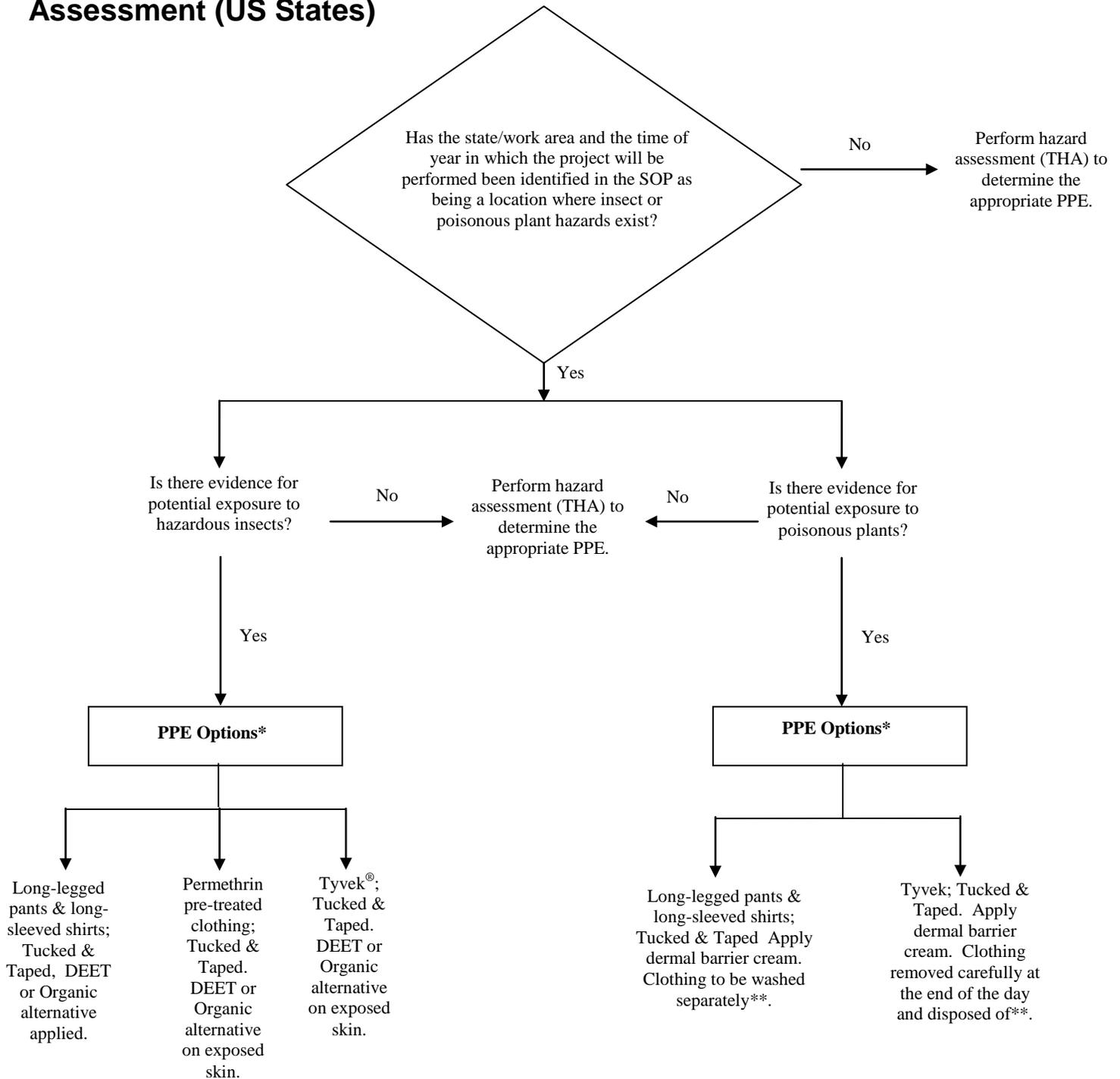
4.0 Alligator Attack

- 4.1 If it seizes prey, and the prey fights back hard, the alligator may release it, depending on factors such as its own size relative to that of the victim, its own level of aggression, and its measure of hunger. Merely struggling to break free may not be enough counter-aggression to stop an alligator, and may actually prompt a devastating "death roll" response, in which the reptile furiously spins on its central axis to tear muscle and bone free of the victim's body.
- 4.2 These armored saurian are among the toughest beasts in the animal kingdom, so an attack victim should channel his or her nervous energy and will to survive and take the offensive by fighting hard. Not struggling...fighting very, very, very hard. Others on hand during such an event may be able to help by fighting the reptile, too. This should include punching the snout, poking the eyes, and even jabbing the ears, which are seen as small slits behind the eyes.

5.0 Additional Resources

- 5.1 Additional resources can be found at:
 - 5.1.1 <http://www.tpwd.state.tx.us/huntwild/wild/species/alligator/index.phtml>
 - 5.1.2 <http://corkscrew.audubon.org/Wildlife/Alligators.html>

5-313-Biological Hazard Assessment Decision Flow Chart Hazard Assessment (US States)



* indicates that when both insect and poisonous plant hazards are recognized hazards at a project site, the most conservative combination of the available PPE choices will be selected.

** indicates that clothing that has been known or suspected to have come in contact with poisonous plants must be washed before it can be worn again. Similarly, Tyvek® that has been known or suspected to have come in contact with poisonous plants will be disposed of rather than reused during a subsequent day or project.

State by State Guideline for Exposure

States	Tick-Borne Diseases	Mosquito-Borne Diseases	Poisonous Plants
Alabama	Year Round Low Risk	Year Round	Year round
Alaska	No Risk	No Risk	No Risk
Arizona	No Risk	March - July	March - November
Arkansas	March - November	March - November	March - November
California	Low Risk	March - November	Year Round
Colorado	Low Risk	March - November	No Risk
Connecticut	March - November	Low Risk March - November	March - November
Delaware	March - November	Low Risk March - November	March - November
Florida	Year Round Low Risk	Year Round	Year round
Georgia	Year Round Low Risk	Year Round	Year round
Hawaii	No Risk	No Risk	No Risk
Idaho	No Risk	Low Risk March - November	No Risk
Illinois	March - November	March - November	March - November
Indiana	March - November	March - November	March - November
Iowa	March - November	March - November	March - November
Kansas	Low Risk	March - November	March - November
Kentucky	March - November	March - November	March - November
Louisiana	Year Round Low Risk	Year Round	Year round
Maine	March - November	March - November	March - November
Maryland	March - November	Low Risk	March - November
Massachusetts	March - November	March - November	March - November
Michigan	March - November	March - November	March - November
Minnesota	March - November	March - November	March - November
Mississippi	Year Round	Year Round	Year round
Missouri	March - November	March - November	March - November
Montana	Low Risk March - July	Low Risk March - July	No Risk
Nebraska	Low Risk	Low Risk	Low Risk
Nevada	Low Risk March - July	Low Risk March - July	Low Risk March - November
New Hampshire	March - November	March - November	March - November
New Jersey	March - November	March - November	March - November
New Mexico	No Risk	Low Risk March - July	No Risk
New York	March - November	March - November	March - November
North Carolina	March - November	March - November	March - November
North Dakota	No Risk	March - November	No Risk
Ohio	Low Risk March - November	March - November	March - November
Oklahoma	March - November	Low Risk March - November	March - November
Oregon	Low Risk March - November	Low Risk March - November	March - November
Pennsylvania	March - November	March - November	March - November
Puerto Rico	???	Low Risk March - November	Year round



States	Tick-Borne Diseases	Mosquito-Borne Diseases	Poisonous Plants
Rhode Island	March - November	Low Risk March - November	March - November
South Carolina	March - November	Low Risk March - November	March - November
South Dakota	Low Risk March - November	March - November	March - November
Tennessee	March - November	March - November	March - November
Texas	Year Round Low Risk	Year Round	Year round
Utah	Low Risk March - July	Low Risk March - July	No Risk
Vermont	March - November	Low Risk March - November	March - November
Virginia	Low Risk March - November	March - November	March - November
Washington	Low Risk March - November	Low Risk March - November	March - November
West Virginia	Low Risk March - November	March - November	March - November
Wisconsin	March - November	March - November	March – November
Wyoming	No Risk March - July	Low Risk March - July	No Risk

5-313-Configuration Clothing for Protection Against Ticks and Insects

1.0 Configuration of Clothing

- 1.1 Loose-cuff trousers must be tucked into socks, wrapped with duct tape (or equivalent) completely around the cuff of the sock up on to the surface of the pant leg to prevent entry of insects between the sock and pants, and preferably reverse-wrapped with “sticky” side out (see figure below). Once the clothing is configured, insect repellent containing DEET (or acceptable alternative) should be applied to the clothing.



5-313-Insect Repellent Active Ingredient Product Information

1.0 Application of Insect Repellent

- 1.1 Immediately prior to the commencement of work in the field, an Resolution Consults -approved insect repellent shall be applied to exposed skin, and to the outer surface of pant leg cuffs tucked into socks, shirt tails tucked into pants at the waist, and shirt cuffs.
- 1.2 Table 1 provides a list of Resolution Consults-approved insect repellent active ingredients; employees may utilize any brand containing the minimum concentration of active ingredients as listed.
- 1.3 All products are registered with the EPA and recommended by the CDC.
- 1.4 Employees should select the Resolution Consults approved repellent which is best for them based on skin sensitivity/allergies, and personal preference, but be aware that reapplication frequency will be greater for Picaridin and lemon eucalyptus products.
- 1.5 Employees shall carefully read and comply with manufacturer recommendations and instructions on product labels prior to application. Repellent shall not be applied beneath clothing to minimize the potential for irritation and/or allergic reaction.
- 1.6 The chemical N,N-diethyl-*m*-toluamide (DEET) shall not be applied to Nomex™ fire retardant clothing as it reduces the effectiveness of the fabric.

**Table 1
Approved Insect Repellents**

Active ingredient and minimum concentration	Products Available	Approximate Duration of Effectiveness	Notes and Web Link to Product Safety Information
Permethrin (0.5%)	-Repel® Permanone -Coulston's Duranon™	2 weeks ¹	-Application to clothing and equipment only
DEET (23.8%)	-Deep Woods Off!® -Repel® Sportsmen Formula®	5 hours ²	-Cannot be applied to Nomex™ fabric
Picaridin (7%)	-Cutter Advanced™	4 hours ³	-Protection equivalent to approximately 10% DEET
Oil of Lemon Eucalyptus (30%)	-Repel® Lemon Eucalyptus	2 hours ²	-Protection equivalent to approximately 7% DEET -Natural, plant based product

¹ – New York State Department of Health, 2007

² – Fradin and Day, 2002

³ – Spectrum Brands, 2007

- 1.7 Repellent shall be reapplied multiple times daily over the course of the day at a frequency identified during the hazard assessment based on manufacturers' recommendations, the approximate effective period provided in Table 1, and other factors such as perspiration, precipitation, etc.
- 1.8 All approved repellents are available at most department or sporting goods stores.

Product Safety Information

Facts about the repellants recommended by Resolution Consults are available by clicking on the embedded link.

National Pesticide Telecommunications Network Fact Sheet: Permethrin and Picaridin

Picaridin



Picaridin Fact
Sheet.pdf

Permethrin



Permethrin Fact
Sheet.pdf

DEET



DEET Fact Sheet.pdf

Lemon Eucalyptus



Lemon Eucalyptus
fact sheet.pdf

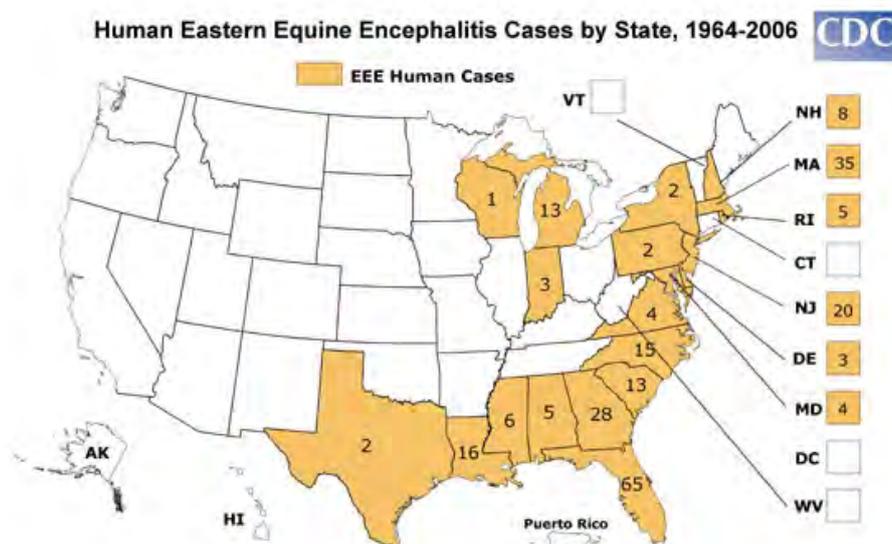
5-313-Mosquito-Borne Diseases

1.0 Background

- 1.1 CDC data indicates that mosquito-borne illnesses, including encephalitis, are a health risk to employees working in outdoor environments.
- 1.2 Mosquitoes pose a risk of causing infection with various forms of encephalitis and other diseases in Resolution Consultants employees. This section will focus on the transmission of encephalitis. West Nile encephalitis is an infection of the brain that is caused by a virus known as the West Nile virus.
- 1.3 If other mosquito-borne diseases are identified in the project area, the local Public Health Department and CDC should be consulted to determine what diseases are present and exposure prevention recommendation.
- 1.4 According to the CDC, arboviral encephalitis is a virus that is “maintained in nature through biological transmission between susceptible vertebrate hosts by blood feeding arthropods”, e.g., mosquitoes. It exists in various forms in global distribution, and in four primary forms in the U.S.: 1) eastern equine encephalitis (EEE), 2) western equine encephalitis (WEE), 3) St. Louis encephalitis (SLE), and 4) La Crosse (LAC) encephalitis; all of which are transmitted by mosquitoes.
- 1.5 Mosquitoes are known to breed in standing water; therefore, when standing water is found at a job site, actions should be taken to drain the water. Typically, mosquitoes will fly only a quarter of a mile (400 meters) from their breeding location.

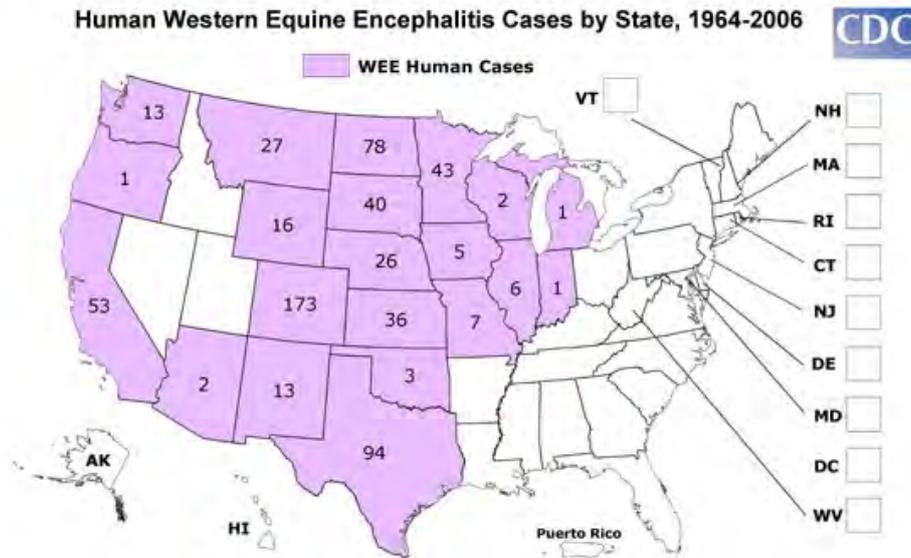
2.0 Distribution

**Figure 1
Distribution Map for EEE Cases**



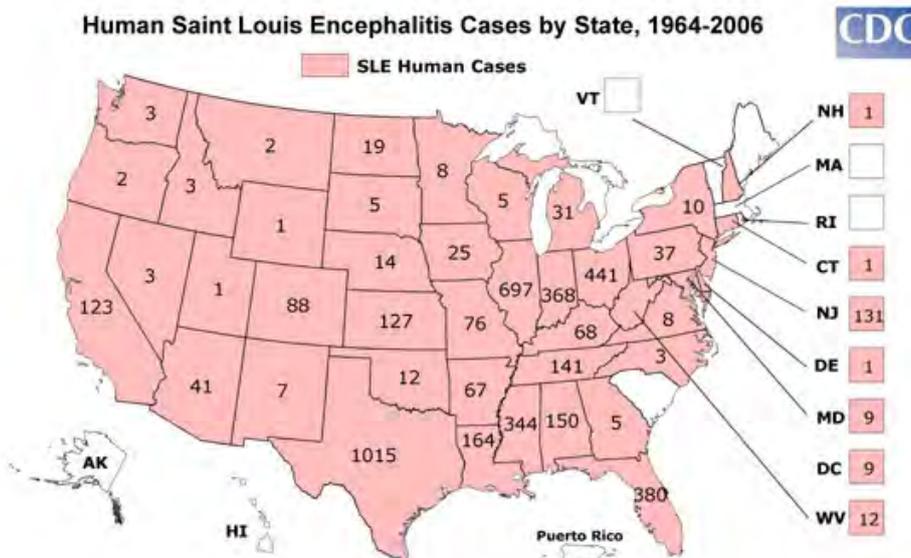
Source: http://www.cdc.gov/ncidod/dvbid/arbor/images/EEE_Map.jpg

Figure 2
Distribution Map for WEE Cases



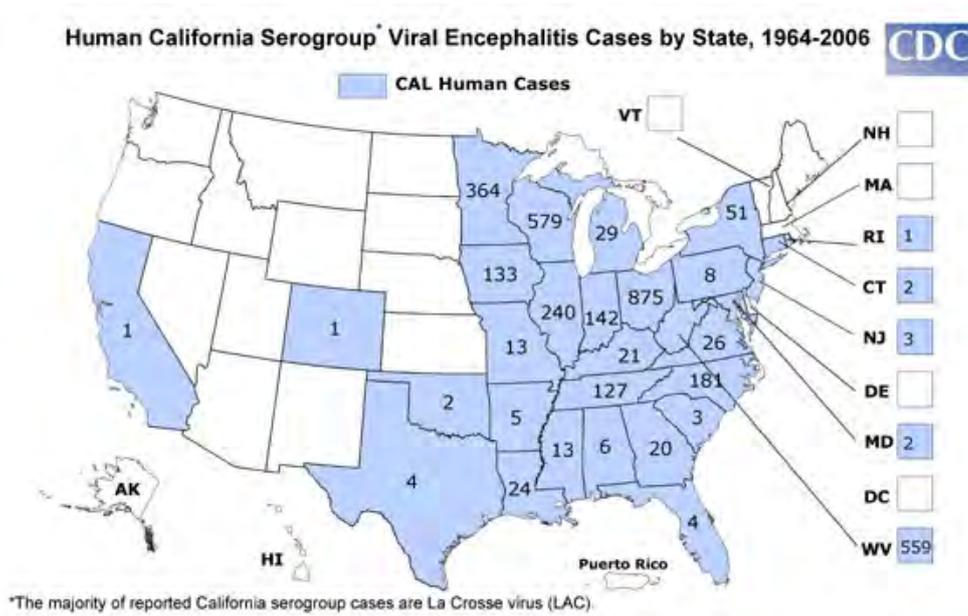
Source: http://www.cdc.gov/ncidod/dvbid/abor/images/WEE_Map.jpg

Figure 3
Distribution Map for SLE Cases

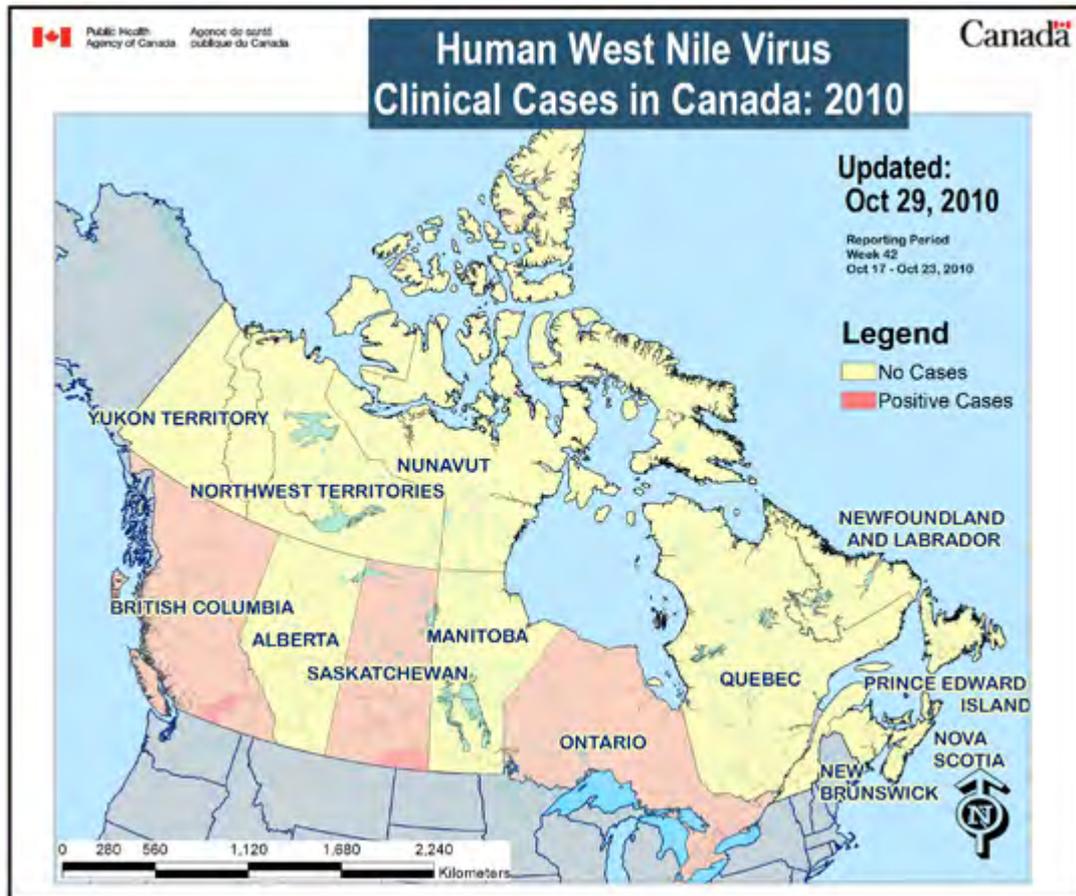


Source: http://www.cdc.gov/ncidod/dvbid/abor/images/SLE_Map.jpg

**Figure 4
Distribution Map for LAC Cases**



Canadian Mosquito Borne Diseases



Source: <http://www.eidgis.com/wnvmonitorca/>

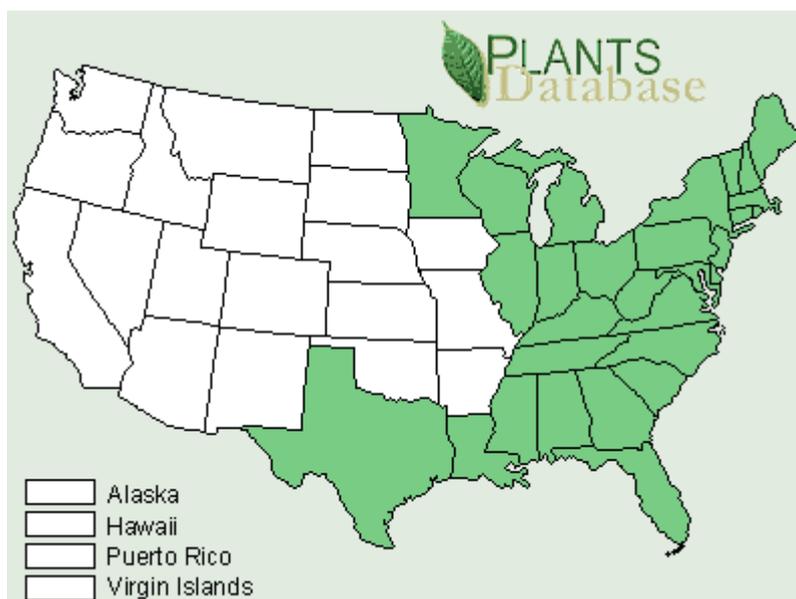
Disease	Distribution
California encephalitis	Canada-wide
Western equine encephalitis	Western Canada
Eastern equine encephalitis	Quebec, Ontario
St Louis encephalitis	Ontario, Quebec, Manitoba, Saskatchewan
Cache Valley	Ontario, Manitoba, Saskatchewan, Alberta

Source: [Paediatr Child Health. 2000 May-Jun; 5\(4\): 206-212.](#)

Figure 2
Distribution Map for Poison Oak



Figure 3
Distribution Map for Poison Sumac



Source for Figures 1, 2, and 3: <http://www.tecnuextreme.com/plant-map.htm>

5-313-Poisonous Spider Identification

Black Widow Spider

- Abdomen usually shows hourglass marking.
- The female is 3-4 centimeters in diameter.
- Have been found in well casings and flush-mount covers.
- Not aggressive, but more likely to bite if guarding eggs.
- Light, local swelling and reddening of the bite are early signs of a bite, followed by intense muscular pain, rigidity of the abdomen and legs, difficulty breathing, and nausea.
- If bitten, see physician as soon as possible.



Brown Spiders (Recluse)

- Central and South U.S., although in some other areas, as well.
- ¼-to-½-inch-long body and the size of silver dollar.
- Hides in decaying wood, baseboards, ceilings, cracks, and undisturbed piles of material.
- Bite either may go unnoticed or may be followed by a severe localized reaction, including scabbing, necrosis of affected tissue, and very slow healing.
- If bitten, see physician as soon as possible.



Exercise care when collecting samples and avoid reaching into areas where visibility is limited. If bitten by a spider, attempt to identify the spider, notify a co-worker or someone who can help should the bite site become painful, discolored, or swollen. Stay calm and treat the area with ice or cold water. Seek medical attention if you have any reactions to the sting such as developing a rash, excessive swelling or pain at the site of the bite or any swelling or numbness beyond the site of the bite.

Additional USA Spider Identification charts are available at <http://www.termite.com/spider-identification.html>

5-313-Snakes

1.0 Hazard

- 1.1 **Snakes have the ability to inject venom.** A bite from a venomous snake, which may inject varying degrees of toxic venom, is rarely fatal but should always be considered a medical emergency.

2.0 Personal Protective Equipment

- 2.1 Long pants and shirts.
- 2.2 Heavy gloves if staff will be handling debris or be close to the ground.
- 2.3 Rubber boots, or boots that fully cover the foot (not sandals!) and preferably are at least 10" high.
- 2.4 Snake Chaps that cover at least the shin.
- 2.5 Personal first aid kit.

3.0 Restrictions

- 3.1 Staff must not work alone in areas where the risk of a snake encounter is high.

4.0 Training

- 4.1 Staff must be notified of the hazard before work commences.

5.0 Safe Work Practice

- 5.1 Staff working in areas known to be inhabited by venomous snakes should take extra precautions, be able to identify the local snake species, and understand the best practices for administering first aid.
- 5.2 Most snakes in Canada are non-venomous; and most snake bites are not fatal, only painful. Learning to identify snake species will assist you in responding appropriately to an encounter, and will assist medical professionals in determining if antivenin needs to be administered if anyone is bit.
- 5.3 Most snakes are non-aggressive and will only attack if immediately threatened.
- 5.4 **Prevention**
- 5.4.1 Before venturing out into the wilderness, familiarize yourself with the snakes in your area, both venomous and non-venomous species.
- 5.4.2 Learn which habitats the venomous species in your region are likely to be encountered in, and use caution when in those habitats.
- 5.4.3 Try as much as possible not to take a snake by surprise.
- 5.4.4 Stay on trails where possible, and watch where you place your hands and feet, especially when climbing or stepping over fences, large rocks, and logs, or when collecting firewood. Take care when overturning any objects on the ground when in snake country.
- 5.4.5 If you see a snake, give it as much room as possible. Most snakes have a strike distance that is only half the length of their body.
- 5.4.6 If you get very close to a rattlesnake, hold very still until it calms down and starts to move away. Then slowly move backwards until you are at least one snake-body length away.

5.5 Treatment

- 5.5.1 Venomous snakebites are rare, and they are rarely fatal to humans. Of the 8,000 snakebite victims in the United States each year, only about 10 to 15 die. In Canada the number of snake bites each year is very small. However, for any snakebite the best course of action is to get medical care as soon as possible.

- 5.5.2 Try to keep the snakebite victim still, as movement helps the venom spread through the body.
- 5.5.3 Keep the injured body part motionless and just below heart level.
- 5.5.4 Keep the victim warm, calm, and at rest, and transport him or her immediately to medical care.
- 5.5.5 Do not allow him to eat or drink anything.
- 5.5.6 If medical care is more than half an hour away, wrap a bandage a few inches above the bite, keeping it loose enough to enable blood flow (you should be able to fit a finger beneath it). Do not cut off blood flow with a tight tourniquet. Leave the bandage in place until reaching medical care.
- 5.5.7 If you have a snakebite kit, wash the bite, and place the kit's suction device over the bite. (Do not suck the poison out with your mouth.) Do not remove the suction device until you reach a medical facility.
- 5.5.8 Identify the snake that caused the bite to determine if it is venomous, and if antivenin needs to be administered. Do not waste time or endanger yourself trying to capture or kill it. Note the shape & color of the snake's head.
- 5.5.9 If you are alone and on foot, start walking slowly toward help, exerting the injured area as little as possible.
- Note that there are several species of snakes that superficially resemble rattlesnakes. Several species, including Bull, Milk, Fox, and Rat Snakes will even rattle their tails when startled.
 - Massasauga Rattlesnake is recognized as a Threatened Species in Ontario and it is an offence to harass, , or destroy the habitat of this species.
 - One scorpion species, the Northern Scorpion (*Paruroctonus boreus*) occurs in semi-arid areas of southern British Columbia, Alberta, and Saskatchewan. It carries a stinger on the end of its tail. The sting is painful but not life threatening unless there is an allergic reaction.

6.0 Species

6.1 Venomous Snakes in Canada

<p>Eastern Massasauga Rattlesnake (<i>Sistrurus catenatus</i>) found around Wainfleet, Windsor, Bruce Peninsula and eastern Georgian Bay in Ontario.</p>	 <p>Eastern Massasauga Rattlesnake picture by Michael Redmer/Courtesy Lincoln Park Zoo</p>
<p>Northern Pacific Rattlesnake (<i>Crotalus viridis</i>) found primarily in Okanagan and Thompson River valleys of southern British Columbia.</p>	 <p>LANCE TANNAHILL 2000</p>

<p>Prairie Rattlesnake (<i>Crotalus viridis</i>) found in south eastern Alberta, and south western Saskatchewan.</p>	
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6.2 Venomous snakes in the U.S.

<p>Rattlesnake(<i>Crotalus cerastes</i>) found mostly concentrated in the southwestern United States, they extend north, east and south in diminishing numbers and varieties. Every contiguous state has one or more varieties of rattlesnake.</p> <p>The rattlesnake is found in many different biomes ranging from along the coast at sea level, the inland prairies and desert areas to the mountains at elevations of more than 10,000 feet.</p> <p>Species include: Sidewinder, Santa Catalina, Western, Mojave, Red Diamond, Western Diamond, Ridge Nosed, Eastern Diamondback, and Pigmy.</p>	 <p>Western Rattlesnake</p>  <p>Eastern Diamondback</p>
<p>Copperhead (<i>Agkistrodon contortrix</i>) is the most common venomous snake found in the eastern US. It can be found in the states of Texas, Oklahoma, Kansas, Missouri, Arkansas, Louisiana, Mississippi, Alabama, Georgia, Florida, South Carolina, North Carolina, Tennessee, Kentucky, Virginia, Illinois, Indiana, Ohio, Iowa, Pennsylvania, Maryland, New Jersey, Delaware, New York, Connecticut, and Massachusetts.</p>	
<p>Cottonmouths (water moccasins) (<i>Agkistrodon piscivorus</i>) found in the eastern United States from Virginia, south through the Florida peninsula and west to Arkansas, eastern and southern Oklahoma, and east and central Texas..</p>	

Coral Snake (*Micrurus sp.*) found in the southern range of many temperate US states including North Carolina, Georgia, Alabama, Mississippi, Louisiana, Texas, Arkansas, Kentucky, Arizona, and New Mexico.



Eastern Coral Snake, [Micrurus fulvius](#)

7.0 References

- 7.1 *The Eastern Massasauga Rattlesnake Stewardship Guide. A resource and field guide for living with rattlesnakes in Ontario.* Sponsored by the Government of Canada, and distributed on behalf of the Toronto Zoo and the Eastern Massasauga Rattlesnake Recover Team.
- 7.2 <http://www.rattlesnakes.us/>
- 7.3 <http://drdavidson.ucsd.edu/Portals/0/snake/Crotalus.htm>

5-313-Tick Test Request Form



IGeneX, Inc.
795 San Antonio Road
Palo Alto, CA 94303
800/832-3200
www.igenex.com

TICK TEST REQUEST FORM

Revised: JUNE 2008

TO SEND A TICK:

- Place ticks (up to 20) in a small tube or plastic baggy with a small piece of moist cotton.
 - Place container in a sealed plastic bag.
 - Fill out lower portion of this form.
 - Place form, check and sealed plastic bag in padded envelope or box.
 - Send to IGeneX, Inc. and mark front of envelope or box with "TT".
 - IGeneX does not "TYPE" or determine the species of the ticks. If you want to "TYPE" your tick, please contact your local Vector Control Center.
 - Once your tick(s) have been processed, the tick can not be returned to you.
 - For Multiple Ticks: up to 20 ticks will be tested together at one time unless indicated otherwise.
- If ticks are tested separately, the charge is per tick. Please test my ticks separately. Yes

Please test the tick by PCR for:

<input type="checkbox"/>	Test 140	Lyme Disease (<i>B. burgdorferi</i>)	\$65.00
<input type="checkbox"/>	Test 689	Babesiosis (<i>B. microti</i> and/or <i>B. duncani</i>)	\$65.00
<input type="checkbox"/>	Test 148	Ehrlichiosis (<i>Ehrlichia</i>)	\$65.00
<input type="checkbox"/>	Test 290	<i>Bartonella henselae</i>	\$65.00
<input type="checkbox"/>	Test 975	<i>Rickettsia</i>	\$65.00

Name and Address of Sender:

If you would like results faxed or called, please indicate below. Otherwise, results will be mailed by USPS.

Please fax my completed results to:
() -

Phone: () _____

Please call me with my results at:
() -

Check enclosed payable to IGeneX, Inc.

Please charge my credit card for the above tests:

Visa Mastercard Discover

Card Number: _____

Exp. Date _____

Signature _____

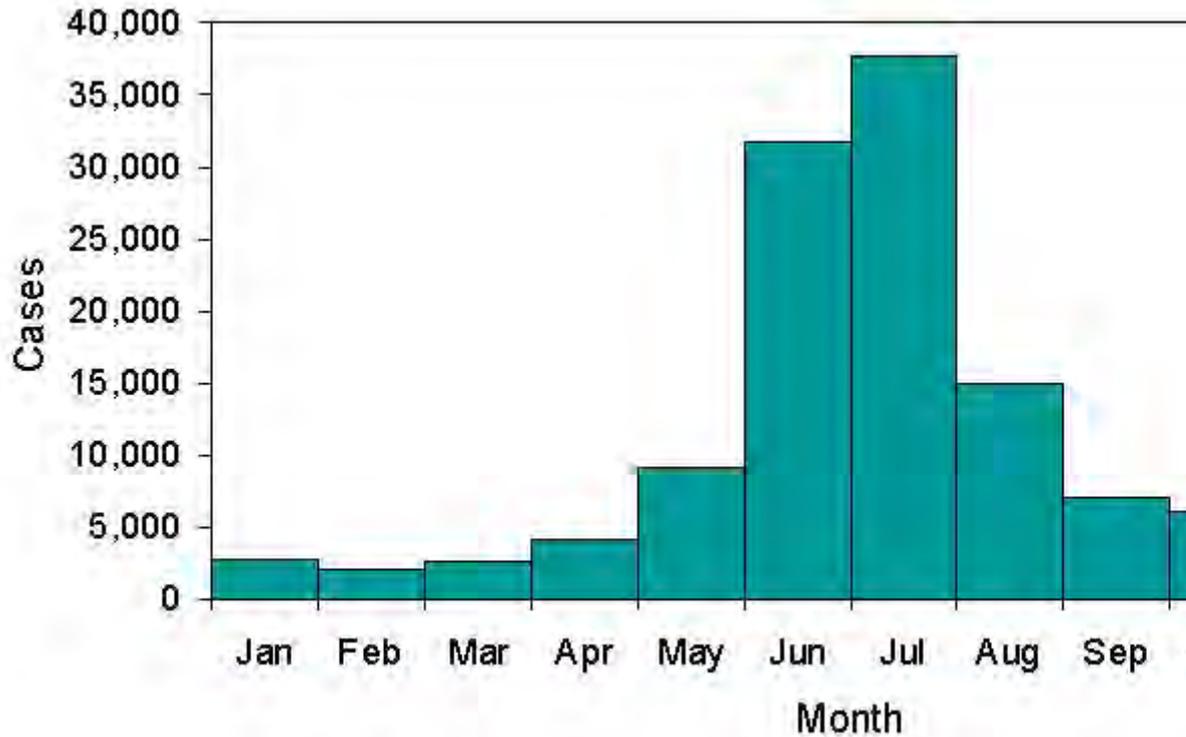
5-313-Ticks

1.0 Background

- 1.1 The Public Health Agency of Canada (PHAC) works with the provinces, health authorities and other experts on research to define and monitor the occurrence of the ticks that carry *Borrelia burgdorferi*, the bacterium that causes Lyme disease. In Canada, the blacklegged tick (*Ixodes scapularis*; often referred to as a deer tick) and the western blacklegged tick (*Ixodes pacificus*) are the species known to transmit this disease-causing agent, as well as other less common agents.
- 1.2 In Quebec, blacklegged tick populations are becoming established in parts of the Monteregie and Estrie regions in the southeast of the province. In Ontario, populations can be found in Long Point; Point Pelee National Park; Rondeau Provincial Park; Turkey Point; Prince Edward Point National Wildlife Area and St. Lawrence Islands National Park in the Thousand Islands region of eastern Ontario. In Nova Scotia, blacklegged tick populations are found in the Lunenburg, Bedford and Shelburne areas. An established population has also been found in the southeastern corner of Manitoba. Western blacklegged ticks, on the other hand, are found in British Columbia; they are fairly widely distributed but populations are largest in the lower mainland, on Vancouver Island, and in the Fraser Valley.
- 1.3 Although the distribution of blacklegged ticks in Canada appears to be limited, surveillance indicates that some of the established populations are spreading within certain areas of southern Canada. The potential expansion of localized tick populations makes it difficult to precisely define the geographic limits of any given population; however, people living in or visiting areas adjacent to established tick populations may have a greater chance of contact with blacklegged ticks. Although current evidence does not suggest a widespread distribution of blacklegged tick populations in Canada, the establishment of new populations appears to be an ongoing process. Hence, it is desirable to continue surveillance and to take precautions to reduce tick contact.
- 1.4 The rate of infection of ticks with the bacterium that causes Lyme disease varies. Infection rates are typically higher in adult ticks compared to the other stages (nymphs and larvae). Despite the lower rates of infection, people are most likely to acquire Lyme disease from a nymph because this stage is so small (see Figure 2) and thus more likely to go unnoticed and feed for a sufficient amount of time for the Lyme disease bacterium to be transmitted (24-36 hours). Infection rates are often greater in tick populations that have been established for long periods of time (such as Long Point) compared to newly established ones. As many as 60 percent of the adult ticks at Long Point are infected; however, infection rates in adults are more often between 10 and 25 percent at the other localities where ticks are established. Partly because of differences in the types of hosts that they feed upon, infection rates of the Lyme disease agent in *Ixodes pacificus* are much lower (1-3 percent) than *Ixodes scapularis*.
- 1.5 While there is a higher risk of coming in contact with infected blacklegged ticks in areas where populations are established, there is also a low risk of Lyme disease being contracted almost anywhere in Canada because migratory birds transport infected ticks over large geographic distances. Surveillance data indicates that about 12 percent of the ticks detected outside of areas where tick populations are established, and likely transported there on migratory birds, are infected with the agent of Lyme disease.
- 1.6 Source: <http://www.phac-aspc.gc.ca/id-mi/tickinfo-eng.php>

Figure 1

Reported Cases of Lyme Disease by Month of Illness Onset United States, 1992-2004



Lyme disease patients are most likely to have illness onset in June, July, or August and less likely to have illness onset from December through March.

Lyme disease likelihood = April through November http://www.cdc.gov/ncidod/dvbid/lyme/ld_rptmthofill.htm

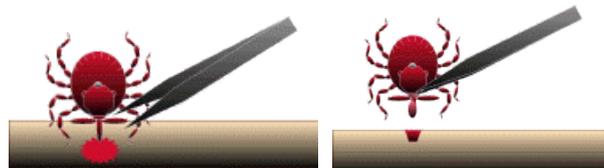
2.0 Tick removal tips from CDC

<http://www.cdc.gov/ncidod/dvrd/ehrlichia/Q&A/Q&A.htm>

3.0 To Remove Attached Ticks



- 3.1 Use fine-tipped tweezers or notched tick extractor, and protect your fingers with a tissue, paper towel, or latex gloves (see figure). Persons should avoid removing ticks with bare hands.
- 3.2 Grasp the tick as close to the skin surface as possible and pull upward with steady, even pressure. Do not twist or jerk the tick; this may cause the mouthparts to break off and remain in the skin. (If this happens, remove mouthparts with tweezers. Consult your health care provider if illness occurs.)
- 3.3 After removing the tick, thoroughly disinfect the bite site and wash your hands with soap and water.
- 3.4 Do not squeeze, crush, or puncture the body of the tick because its fluids may contain infectious organisms. Skin accidentally exposed to tick fluids can be disinfected with iodine scrub, rubbing alcohol, or water containing detergents.
- 3.5 Save the tick for identification in case you become ill. This may help your doctor make an accurate diagnosis of potential diseases by determining what type of tick it is. Place the tick in a sealable plastic bag and put it in your freezer. Write the date of the bite on a piece of paper with a pencil and place it in the bag.



4.0 Devices Designed for Removing Ticks

- 4.1 [The Tick Tool - http://www.ticktool.com/index.html](http://www.ticktool.com/index.html)

5.0 Folklore Remedies Don't Work

- 5.1 Folklore remedies, such as the use of petroleum jelly or hot matches, do little to encourage a tick to detach from skin. In fact, they may make matters worse by irritating the tick and stimulating it to release additional saliva or regurgitate gut contents, increasing the chances of transmitting the pathogen. These methods of tick removal should be avoided.

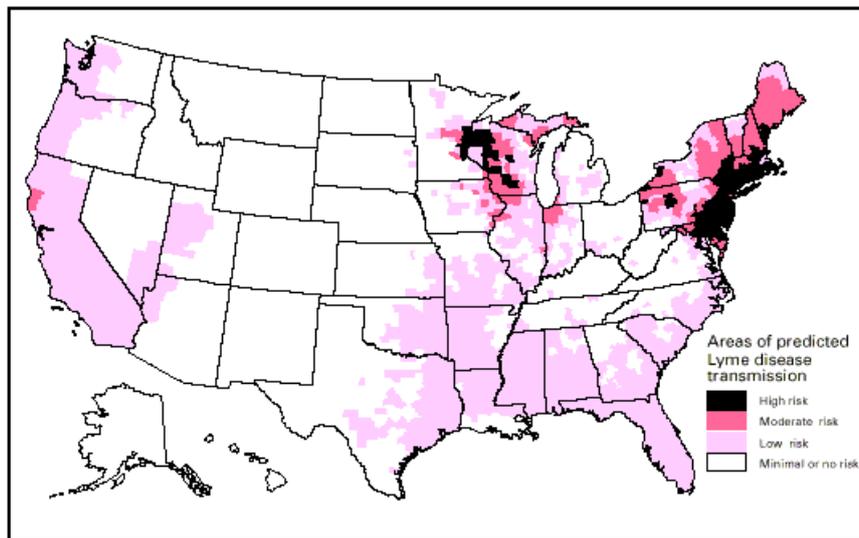
**Information Regarding Common Tick-Borne Diseases and
Tick Removal Procedures**

**Table 1
Common Tick-Borne Diseases in the U.S. and Information Resources**

Disease	Tick Species	CDC Informational Web Pages
Lyme disease	<ul style="list-style-type: none"> • Black-legged or deer tick • Western black legged tick 	http://www.cdc.gov/ncidod/dvbid/lyme/
Ehrlichiosis	<ul style="list-style-type: none"> • Lone star tick • Black-legged or deer tick • Western black legged tick 	http://www.cdc.gov/Ncidod/dvrd/ehrlichia/Index.htm
Rocky Mountain spotted fever	<ul style="list-style-type: none"> • American dog tick • Rocky Mountain wood tick • Brown dog tick 	http://www.cdc.gov/ncidod/dvrd/rmsf/index.htm

6.0 Distribution

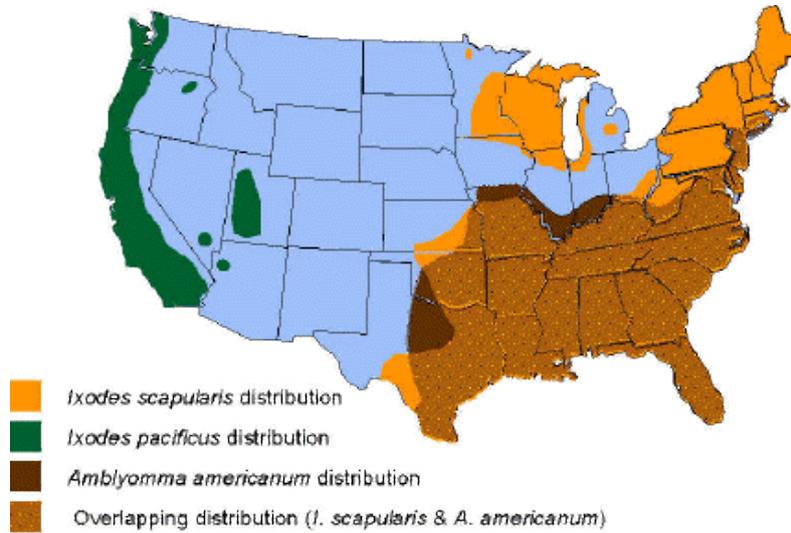
**Figure 2
Distribution Map for Lyme Disease Risk, U.S.**



Note: This map demonstrates an approximate distribution of predicted Lyme disease risk in the United States. The true relative risk in any given county compared with other counties might differ from that shown here and might change from year to year. Risk categories are defined in the accompanying text. Information on risk distribution within states and counties is best obtained from state and local public health authorities.

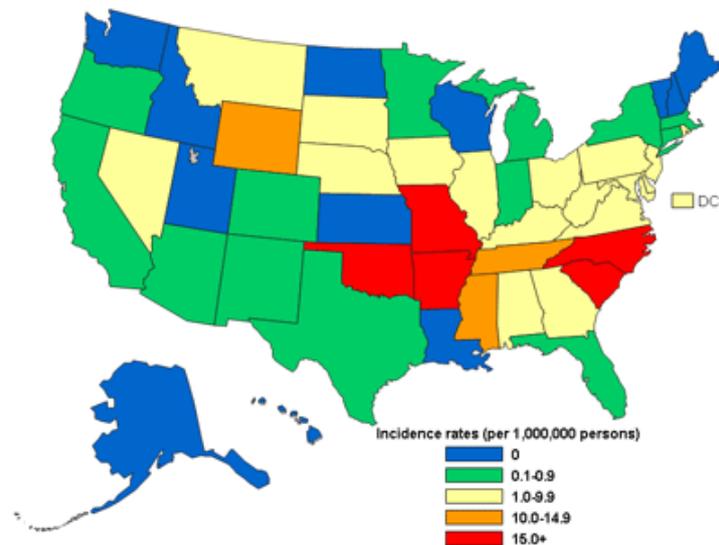
Source: CDC, <http://www.cdc.gov/ncidod/dvbid/lyme/riskmap.htm>

Figure 3
Distribution Map of Vector
Tick Species for Human Ehrlichiosis, U.S.



Source: CDC, <http://www.cdc.gov/ncidod/dvrd/ehrlichia/Q&A/Q&A.htm>

Figure 4
Distribution Map of Annual Incidence
of Rocky Mountain Spotted Fever, U.S



Data for calendar year 2002

Source: CDC, <http://www.cdc.gov/ncidod/dvrd/rmsf/Epidemiology.htm>

5-313 Wildlife, Plants and Insects

1.0 Purpose and Scope

- 1.1 Communicates the requirements and precautions to be taken by Resolution employees to protect against the biological hazards associated with insects, arachnids, snakes, poisonous plants, and other animals referred to herein collectively as “biological hazards”.
- 1.2 This procedure applies to all Resolution employees and operations.

2.0 Terms and Definitions

- 2.1 **Field Work:** Field work is defined as any activity conducted at a site that contains brush, overgrown grass, leaf litter, poisonous plants, or is located near mosquito breeding areas and includes work in structures where animals might exist that harbor fleas or ticks or where spiders and mites could be present. Field work includes, but is not limited to, Phase I, Phase II, Operations Monitoring & Maintenance (OM&M), biological surveys, and other work that meets the definition of field work.
- 2.2 **Poisonous:** Capable of harming or killing by or as if by poison; toxic or venomous.
- 2.3 **Phase I Environmental Site Assessment:** Investigation of real property to determine the possibility of contamination, based on visual observation and property history, but no physical testing. Under new Environmental Protection Agency regulations that went into effect on November 1, 2006, a Phase I, as it is called for short, will be mandatory for all investors who wish to take advantage of CERCLA defenses that will shield them from liability for future cleanup, should that prove necessary. The new Phase I rules, called “All Appropriate Inquiry” or AAI, also require more investigation than previously mandated. Investors can expect to see dramatic price increases over prior experiences.
- 2.4 **Phase II Environmental Site Assessment:** Investigation of real property through physical samplings and analyses to determine the nature and extent of contamination and, if indicated, a description of the recommended remediation method.

3.0 References

- 3.1 Public Health Agency of Canada (<http://www.phac-aspc.gc.ca/id-mi/tickinfo-eng.php>) on Ticks and Lyme Disease in Canada
- 3.2 Public Health Agency of Canada (<http://www.phac-aspc.gc.ca/wn-no/index-eng.php>) on West Nile Virus
- 3.3 United States Center for Disease Control (CDC) (<http://www.cdc.gov/ncidod/dvbid/lyme/index.htm>) on Lyme Disease
- 3.4 New York State Department of Health, 2007. Health Advisory, Tick and Insect Repellents. <http://www.health.state.ny.us/nysdoh/westnile/pdf/2737.pdf>
- 3.5 Spectrum Brands, 2007. Personal Insect Repellent Products. http://www.spectrumbrandshomeandgarden.com/CorpNav/AboutSpectrum/ProductCategories/insect_repellent.htm
- 3.6 U.S. Centers for Disease Control and Prevention, 2004. Tick Management Handbook. <http://www.cdc.gov/ncidod/dvbid/lyme/resources/handbook.pdf>
- 3.7 U.S. Environmental Protection Agency, 2006. Permethrin Facts: Preregistration Eligibility Decision Fact Sheet. http://www.epa.gov/oppsrrd1/reregistration/REDs/factsheets/permethrin_fs.htm
- 3.8 U.S. National Pesticide Information Center, 1997, National Pesticide Telecommunications Network Fact Sheet for Permethrin. <http://npic.orst.edu/factsheets/permethrin.pdf>
- 3.9 U.S. Environmental Protection Agency, 2005. New Pesticide Fact Sheet, Picaridin <http://www.epa.gov/oppr001/factsheets/picaridin.pdf>

4.0 Procedure

4.1 Roles and Responsibilities

4.1.1 Project Managers and Supervisors

- **Project Managers** and **Supervisors** responsible for managing field work will work with employees conducting the work to see that a Task Hazard Analysis (THA) for the work to be conducted has been performed prior to the beginning of the field work and that it includes an assessment of potential biological hazards.
- If biological hazards are identified as an exposure risk in the workplace, control measures that may be applied at the project site will be implemented to reduce the potential for employees to be exposed to injuries and illnesses while working.
- If the exposures cannot be eliminated or managed with engineering controls, the **Project Manager** or **Supervisor** will approve the use of PPE and protective repellents and lotions and ensure that exposed employees have and use these products.

4.1.2 District Operations Manager

- Approve the costs associated with the PPE and materials necessary to protect employees from the biological hazards covered by this Procedure.
- During the performance of project site visits, managers will assess the precautions being taken against the requirements of this Procedure.

4.1.3 Regional SH&E Manager

- Participate in incident reporting and investigations when appropriate.
- Work with office SH&E Department and project Safety Professionals, provide training and guidance to employees consistent with this procedure.
- Assist project teams in identifying hazards and selecting appropriate control measures.

4.1.4 Operational Managers

- Assure implementation of this procedure in their regions and offices.
- Participate in incident reporting and investigations when appropriate.

4.1.5 Employees

- Participate in required training on this procedure.
- Participate in the development of THAs for the project, identify control measures to limit exposure and request PPE, repellents, and protective lotions required by this Procedure.
- Obtain approval from **Project Managers** and/or **Supervisors** to purchase selected PPE prior to purchasing.
- Implement the precautions appropriate to prevent exposure to the hazardous wildlife, insects and plants.
- Observe requirements for reporting as detailed within the Procedure.
- Participate in incident reporting and investigations when appropriate.

4.2 Overview

4.2.1 The procedures discussed below are detailed because these hazards have historically posed the most significant risk to Resolution employees. Note that this discussion is not a fully encompassing list of hazards and as part of the Task Hazard Analysis conducted by the project team, additional consideration must be given to other biological hazards.

4.2.2 Departments of Public Health local to the worksite, as well as the Centers for Disease Control (CDC) can serve as a resource for identifying biological hazards not discussed in this Procedure.

4.2.3 If additional biological hazards are identified, the project team should contact the **Resolution SH&E Manager** to discuss the hazards and identify effective control measures that can be implemented at the project site.

4.3 **Planning and Hazard Assessment**

- 4.3.1 The Resolution project team shall ensure that the potential for exposure to specific biological hazards are assessed prior to the commencement of work and that the procedures specified by this SOP are integrated into the project planning process and conveyed to Resolution employees conducting the field work. This information shall be communicated in the site specific Safe Work Plan (SWP), Health and Safety Plan (HASP), the THA, pre-project kickoff meetings, and tailgate meetings at the project site.
- 4.3.2 It is important to note that the precautions to be taken by Resolution employees to decrease the risk of exposure to biological hazards can directly increase the risk of heat-related illness due to thermal stresses. Therefore, heat stress monitoring and precautions shall be included as a critical component of the project-specific hazard assessments in accordance with *5-511 Heat Stress Prevention*.
- 4.3.3 During the preparation of the project specific Safe Work Plan (SWP), HASP and project specific THA, **Project Managers, Supervisors**, and the project staff will determine what biological hazards might be encountered during the project and will prescribe the precautions to be taken to reduce the potential for exposure and the severity of resulting illnesses. Consideration will be given to conditions such as weather, proximity to breeding areas, host animals, and published information discussing the presence of the hazards.
- 4.3.4 It should be assumed that at least one of the biological hazards exists whenever working on undeveloped property. This can include insect activity any time that local temperatures exceed 40°F for a period of more than 24 hours. The stubble and roots of poisonous plants can be a hazard any time of year, including when some plants are dormant or mown.
- 4.3.5 The hazard assessments must also consider the additional hazards posed by vegetative clearing such as the increased risk of coming in contact with poison ivy, oak or sumac and hazards associated with the use of tools and equipment to remove vegetation.
- 4.3.6 Employees in the field where biological hazards exist will not enter the hazard areas unless they are wearing the appropriate protective clothing, repellents, and barrier creams specified below. If the hazard is recognized in the field but was not adequately assessed during the THA, the affected employees shall stop work and not proceed until the THA has been amended and protective measures implemented.
- 4.3.7 A decision flow chart and table for determining the potential for biological hazards in US states has been provided in *5-313-Biological Hazard Assessment Decision Flow Chart Hazard Assessment (US States)*.

4.4 **Restrictions**

- 4.4.1 Staff with life-threatening reactions shall not undertake work in areas infested with the allergen (e.g., wasps, poison ivy), unless precautions are met which satisfy a medical practitioner's requirements.

4.5 **Employee Sensitivity**

- 4.5.1 Sensitivity to toxins generated by plants, insects and animals varies according to dosage and the ability of the victim to process the toxin, therefore it is difficult to predict whether a reaction will occur, or how severe the reaction will be. Staff should be aware that there are a large number of organisms capable of causing serious irritations and allergic reactions. Some reactions will only erupt if a secondary exposure to sunlight occurs. Depending on the severity of the reaction, the result can be severe scarring, blindness or even death.
- 4.5.2 Employees also need to consider whether they are sensitive to the use of insect repellents.

4.6 **Personal Protective Equipment**

- 4.6.1 The selection of Personal Protective Equipment is dependent on the hazard present and a PPE Hazard Analysis should be conducted to determine situation specific PPE required. (refer to SOP 5-208 *Personal Protective Equipment Program*)
- 4.6.2 At a minimum, in addition to any project specific PPE, long sleeves and pants should be worn on field projects where the risk of biological encounter exists.
- 4.6.3 PPE for insects should include sunscreen, bug nets, bug jackets, or insect repellent. Socks should be pulled over pant legs and rubber boots should be worn where the threat of exposure is anticipated.

- 4.6.4 Epi-pens¹ or other personal medication should be carried by those staff that are aware that anaphylactic shock is a possibility for them.
- 4.7 **Remedies**
- 4.7.1 If you suspect exposure to an irritant, identify the cause including obtaining a specimen if possible. Document the occurrence as a safety precaution if the exposure should lead to complications.
- 4.7.2 Go to a doctor or call WorkCare for advice if necessary.
- 4.8 **Training**
- 4.8.1 Field staff must learn to recognize organisms that represent a threat in the regions in which they work – experienced field staff must provide on the job training to assist staff with hazard recognition.
- 4.8.2 Staff who have severe allergic reactions are strongly recommended to notify their project manager, field supervisor, and co-workers of the potential for a reaction and demonstrate what medication they might need and how it is administered.
- 4.9 **Insects**
- 4.9.1 Insects for which precautionary measures should be taken include but are not limited to: mosquitoes (potential carriers of disease aside from dermatitis), black flies, wasps, bees, ticks, Fire Ants and European Fire Ants.
- 4.9.2 Wasps and bees will cause a painful sting to anyone if they are harassed. They are of most concern for individuals with allergic reactions who can go into anaphylactic shock. Also, instances where an individual is exposed to multiple stings can cause a serious health concern for anyone. These insects are most likely to sting when their hive or nest is threatened.
- 4.9.3 Ticks can be encountered when walking in tall grass or shrubs. They crawl up clothing searching for exposed skin where they will insert mouthparts to drink blood. The most serious concern is a possibility of contracting Lyme disease which is spread by the Black-legged or Deer Tick. The larger Wood Ticks are widespread in the west but these rarely carry diseases. Occasionally a tick can cause Tick Paralysis if it is able to remain feeding for several days. Full recovery usually occurs shortly after the tick is removed.
- 4.9.4 The Fire Ant (southern and western US) and the European Fire Ant (northeastern US and eastern Canada) is often very abundant where it is established. It is very aggressive and commonly climbs up clothing and stings unprovoked when it comes into contact with skin. Painful irritations will persist for an hour or more.
- 4.10 **Ticks**
- 4.10.1 Data from the CDC indicates that tick-borne diseases have become increasingly prevalent. At the same time, tick repellents have become both safe and effective so it is possible to prevent the vast majority of bites and therefore most related illnesses.
- 4.10.2 The most common and severe tick-borne illnesses in the U.S. are Lyme disease, Ehrlichiosis, and Rocky Mountain spotted fever. A summary table listing CDC informational resources for these diseases is provided in 5-313-Ticks, along with a listing of CDC information resources and maps showing the distribution of common tick-borne diseases in the U.S.
- 4.10.3 When working in areas where ticks may occur, it is recommended that clothes are turned inside out and shaken at the end of day; do not wear the same clothes two days in a row.
- 4.10.4 To remove ticks that are embedded in skin, use tweezers or fingers to carefully grasp the tick as close to the skin as possible and pull slowly upward, avoiding twisting or crushing the tick. Do not try to burn or smother the tick. Cleanse the bite area with soap and water, alcohol, or household antiseptic. Note the date and location of the bite and save the tick in a secure container such as an empty pill vial or film canister. A bit of moistened paper towel placed inside the container will keep ticks from drying out.

¹ Epi-pens must be prescribed by a personal physician. Renew epi-pens on a regular schedule to ensure effectiveness and make sure your field companions know where it is and how to use it if you cannot self administer the dose.

- 4.10.5 Familiarize yourself with the characteristic bulls-eye pattern of Lyme disease infection surrounding the bite. If noted, report to medical help for inoculation.
- 4.10.6 If possible, submit any ticks found or captured to the following laboratories for species identification.
- Canada – National Microbiology Laboratory (NML) (Phone: (204) 789-2000; email: ticks@phac-aspc.gc.ca). The NML will conduct diagnostic testing for the Lyme disease agent as well as several other disease-causing agents. The NML results will not only benefit anyone bit by the tick, but will also assist the NML in their goal to accurately map the distribution of the tick species and associated diseases in Canada.
 - US – IGeneX, Inc. (Phone: (800) 832-3200; www.igenex.com). IGeneX will test the tick for the presence of the Lyme bacteria. They also test ticks for *Babesia microti* and/or *Babesia duncani* (formerly WA-1), Ehrlichia, Bartonella henselae and Rickettsia (Rocky Mountain Spotted Fever). These diseases are also carried by ticks. The testing request form is attached as 5-313-FM Tick Test Request Form.
- 4.10.7 If you experience symptoms such as fever, headache, fatigue, and a skin rash, you should immediately visit a medical practitioner as Lyme disease is treated easily with antibiotics in the early stages, but can spread to the heart, joints, and nervous system if left untreated.
- 4.11 **Chiggers**
- 4.11.1 Chiggers are mite larvae, approximately ½ mm in size, and typically invisible to the naked eye. While chiggers are not known to carry infectious diseases, their bites and resulting rashes and itching can lead to dermatitis and a secondary infection.
- 4.11.2 Chiggers are typically active from the last hard freeze in the winter or spring to the first hard freeze. They are active all year in the Gulf Coast and tropical areas.
- 4.12 **Spiders**
- 4.12.1 Spiders can be found in derelict buildings, sheltered areas, basements, storage areas, well heads and even on open ground. Spiders can be found year round in sheltered areas and are often present in well heads and valve boxes.
- 4.12.2 Most spider bites produce wounds with localized inflammation and swelling. The Black Widow and Brown Recluse spiders in the US and others outside the US inject a toxin that causes extensive tissue damage and intense pain.
- 4.12.3 Additional information on spider identification can be found in attachment 5-313-Poisonous Spider Identification.
- 4.13 **Mosquitoes**
- 4.13.1 Mosquitoes can transmit the West Nile Virus and other forms of encephalitis after becoming infected by feeding on the blood of birds which carry the virus. Positive cases of West Nile Virus have been confirmed throughout North America since 2007.
- 4.13.2 Most people infected with the virus experience no symptoms or they have flu-like symptoms. Sometimes though, the virus can cause severe illness, resulting in hospitalization and even death ,so proper precautions should be taken. Consult a medical practitioner if you suspect you have West Nile Virus.
- 4.13.3 When a mosquito bites, it injects an enzyme that breaks down blood capillaries and acts as an anticoagulant. The enzymes induce an immune response in the host that results in itching and local inflammation. The tendency to scratch the bite sites can lead to secondary infections.
- 4.13.4 CDC data indicates that mosquito-borne illnesses, including the strains of encephalitis, are a health risk to employees working in outdoor environments. At least one of the Encephalitis strains listed below is known to exist in every area of the U.S. and in many other countries as well:
- Eastern Equine encephalitis (EEE)
 - Western Equine encephalitis (WEE)
 - West Nile Virus
 - St. Louis encephalitis (SLE)
 - La Crosse (LAC) encephalitis

- 4.13.5 Other diseases including Dengue Fever and Malaria are spread by mosquitoes in the sub-tropic and tropical parts of the world. See 5-313-Mosquito Borne Diseases for information on the locations where mosquito borne diseases are known to be present.
- 4.14 **Bees and Hornets**
- 4.14.1 Bees, hornets, and wasps may be found in derelict buildings, sheltered areas, and even on open ground. The flying/stinging insects are not specifically included in the scope of this procedure and the PPE and other protective measures are not normally effective against aggressive, flying insects. Avoid reaching into areas where visibility is limited.
- 4.14.2 If stung by a wasp or bee or hornet, notify a co-worker or someone who can help should you have an allergic reaction. Stay calm and treat the area with ice or cold water. Seek medical attention if you have any reactions to the sting such as developing a rash, excessive swelling or pain at the site of the bite or sting, or any swelling or numbness beyond the site of the bite or sting.
- 4.14.3 Employees with known allergies to insect stings should consult their personal physician for advice on any immediate medications that they should carry with them. Resolution highly recommends that employees with known allergies inform their co-workers of the allergy and the location of the medications they might carry for the allergy.
- 4.15 **Poisonous Plants**
- 4.15.1 Poisonous plants including poison ivy, oak and sumac, which contain the oil urushiol that produces a rash, can lead to dermatitis and infections. Exposure to urushiol produces a rash that can be irritating and cause the exposed employee to scratch the affected area, increasing susceptibility for an infection. It should be noted that each time an employee is exposed to urushiol the severity of the reaction increases. In cases that involve severe rashes, medical treatment may be necessary to control the rash.
- 4.15.2 Wild parsnip is found throughout the U.S. and contains a poison that produces a rash similar to poison oak and ivy. Unlike poison oak and ivy, the active oil will not be present on unbroken leaves..
- 4.15.3 Plants that field staff should recognize and take precautions to avoid include: Poison Sumac, Poison Ivy (terrestrial and climbing), Poison Oak, Giant Hogweed² (or Giant Cow Parsnip), Wild Parsnip, Devil's Club and Stinging Nettle. Many others are extremely poisonous to eat (e.g., Poison Hemlock; Water Parsnip) – do not eat anything that has not been identified.
- 4.15.4 See 5-313-Plants of Concern for information on locations where some of these poisonous plants are found in the US.
- 4.15.5 Of the toxic plants in the cashew family, Poison Ivy (*Rhus radicans*) is most widespread occurring across southern Canada. It is usually a low sprawling shrub or ground cover but in southwestern Ontario it also grows as a thick woody vine that grows high into the tree canopy. Poison Oak (*Rhus diversiloba*) is a low shrub that grows only in southwestern British Columbia and Poison Sumac (*Rhus vernix*) is a tall shrub that grows in southern Ontario but is quite rare. All of these plants possess urushiol oils in nearly all parts of the plant. Touching the plant causes an itchy skin rash that shows up several days following contact. People have a wide range of reactions which in severe cases can lead to oozing blisters on large parts of the body. Some people apparently never react and others may develop an allergy after no reaction after years of frequent contact.
- 4.15.6 Several plants in the carrot family contain toxic sap that causes severe dermatitis if it comes into contact with skin that is then exposed to sunlight. The most serious reaction is caused by the Giant Hogweed (*Heracleum mantegazzianum*), a garden that is spreading in southern Ontario and is also present in southwestern British Columbia. The plant is enormous, attaining up to 5 m in height, which it does in one growing season. Contact causes painful blistering that can cause permanent disfigurement. It is to be avoided. Similar but less serious reactions can be caused by Meadow Parsnip (*Pastinaca sativa*) and Cow Parsnip (*Heracleum lanatum*). Meadow Parsnip can be very abundant on disturbed sites.
- 4.15.7 Nettles, particularly Stinging Nettle (*Urtica dioica*) and Wood Nettle (*Laportea canadensis*) contain urticating hairs on the leaves and stems that cause sharp pain or itchiness on contact with skin. The

² *Phytophthora* producer: keep skin covered and wash well after exposure

irritation is immediate and normally lasts no more than an hour and there are no lasting consequences.

- 4.15.8 Some plants contain abundant stiff spines that can present a safety hazard, particularly if one is to fall into them. Fragile Prickly Pear cactus (*Opuntia fragilis*) is common in semi arid areas of the southern Prairie Provinces and interior British Columbia. Pieces will break off and imbed into one's ankle by scarcely brushing them. Devils Club (*Oplopanax horridum*) can form dominant understorey in humid forests among the western mountains. It contains semi-soft spines on the stems that will break off in the skin causing considerable irritation for days. In some areas of Ontario, Prickly-ash (*Zanthoxylon americanum*) a tall shrub with sturdy spines, sometimes forms dense single stands that are nearly impenetrable.
- 4.15.9 A large number of plants are not harmful to touch but may contain poisonous berries or foliage that could cause serious complications or death if they are ingested. It goes without saying not to eat any berries or plants if you are not absolutely sure of their identity.
- 4.15.10 Of all the plants, Giant Hogweed presents the most serious health risk. Field staff should learn to recognize and avoid it if encountered.
- 4.15.11 Employees who develop a rash as a result of exposure to poisonous plants shall report the exposure immediately to their **Supervisor** or **Project Manager** who will then forward the report to the **Regional SH&E Manager**.

4.16 **Additional Biological Hazards**

4.16.1 Additional Work Instructions are provided for protection and prevention from the following:

- 5-313-Snakes
- 5-313-Alligators

4.17 **Habitat Avoidance, Elimination, and/or Control**

4.17.1 Ticks, Spiders and Insects

- The most effective method to manage worker safety and health is to eliminate, avoid and/or control hazards. Clearing the project site of brush, high grass and foliage reduces the potential for exposure to biological hazards. Clearing will not eliminate the exposure to flying insects and there might be an increased exposure to ticks, spiders, and poisonous plants during the clearing process.
- Resolution projects such as subsurface environmental assessment or remediation are often candidates for brush and overgrown grass to be cleared. In these instances, the Resolution project manager shall either request that the client eliminate vegetation, or request approval from the client to have vegetation clearing added to the scope of work.
- When projects must be conducted in areas that cannot or may not be cleared of foliage, personal precautions and protective measures outlined in this SOP shall be prescribed.
- Mosquitoes breed in stagnant water and typically only travel a quarter mile from their breeding site. Whenever possible, stagnant water should be drained to eliminate breeding areas. Project Managers and client site managers should be contacted to determine whether water can be drained and the most appropriate method for draining containers, containment areas, and other objects of standing water.
- If water cannot be drained, products similar to Mosquito Dunks® can be placed in the water to control mosquitoes. Once wet, the Mosquito Dunks® kill the immature, aquatic stage of the mosquito. The active ingredient is a beneficial organism that is lethal to mosquito larvae, but harmless to fish, humans, and other animals. Mosquito Dunks® provide long-term protection for 30 days or more.

4.17.2 Poisonous Plants

- If poisonous plants are identified in the work area, employees will mark the plants using either flags or marking paint, and discuss what the specific indicator will be to signal to other employees to avoid the designated area. If employees decide to use ground-marking paint to identify poisonous plants, they should discuss this tactic with the **Project Manager** and/or Client to gain approval.

- If removal of the plants is considered, it should be subcontracted to a professional landscaping service that is capable and experienced in removing the plant. If herbicides are considered for use, a discussion will need to occur with the **Project Manager** and Client to determine whether it is acceptable to apply herbicides at the work site. Application of herbicides may require a license.
- Resolution employees shall not attempt to physically remove poisonous plants from the work area unless a clearing procedure including PPE is prepared in advance and approved by the Regional SH&E Manager. If a SWP or HASP is prepared for the project, the clearing procedure should be included and the required PPE specified.

4.17.3 Bird Droppings

- Bird excrement may be encountered due to the nesting of pigeons and other birds and winged animals (e.g., bats) on or in structures. Substantial accumulations of droppings can pose physical and health risks as slippery surfaces (if wet) and if the material is disturbed and becomes airborne, it can be inhaled or ingested if personal hygiene practices are not implemented. Inhalation of airborne droppings can cause diseases such as histoplasmosis. Exposure to surfaces with bird droppings shall be safeguarded by implementing proper work practices, training employees for awareness and using PPE.

4.18 Personal Precautions and Personal Protective Measures

4.18.1 Precautions

- Be aware of the potential irritants in your area and know how to recognize them.
- Modify activities to avoid encounters (diurnal rhythms, seasonal rhythms).
- Wear protective clothing.
- When working in areas where there may be small insects that “hitchhike” (e.g., ticks, spiders, scorpions), it is recommended that clothes are turned inside out and shaken at the end of day; do not wear same clothes two days in a row.
- Staff should always be aware of where they are placing their hands, or where they are sitting in order to avoid contact with potential toxins.

4.18.2 PPE

- The following recommendations may be considered by the project team to determine if the use of PPE is necessary for the type of work planned: Disposable gloves may be cotton, leather, or synthetic materials and must not be reused after removing.
- Clearing activities present the greatest risk of employee exposure but reduce the risks once completed. Recommendation – Resolution employees actively participating in clearing will use full protection from ticks and insects during the clearing activities including insect repellents, Tyvek® coveralls, and gloves.
- If the foliage being cleared includes poisonous plants, exposed skin will be treated with a dermal barrier cream such as Tecnu®'s Oak 'n Ivy Armor or Enviroderm's Ivy Block and either a full face respirator or a half face respirator (with goggles) fitted with a P-100 (HEPA) dust filter.
- Work in habitats with direct exposure to ticks, mosquitoes, and poisonous plants is likely and the scope of work does not allow for worksite control measures like vegetative clearing: Recommendation – Full protection from biological hazards including insect repellents, Tyvek® coveralls or full length clothing, poisonous plant barrier creams and wipes, and gloves.
- Work in habitats with direct exposure to ticks and mosquitoes and no exposure to poisonous plants is likely and the scope of work typically does allow for worksite control measures like vegetative clearing: Recommendation – Protection including insect repellents and Tyvek® coveralls or full length clothing.
- Work in habitats with direct exposure to poisonous plants and no exposure to ticks or insects is likely and the scope of work does not allow for worksite control measures like vegetative clearing: Recommendation – Full protection from poisonous plants including insect repellents, Tyvek® coveralls or full length clothing, poisonous plant barrier creams and wipes, and gloves.
- Industrial/Commercial/Office Facilities – Direct contact with biological hazards is considered unlikely or low risk: Recommendation – PPE for biological hazards are not required; however, Tyvek coveralls and insect repellent should be available if exposure to spiders, flying insects, or other biological hazards is encountered.

- Work in areas where no biological hazards are expected because of the local environment, winter weather, or property development: Recommendation – PPE for biological hazards is not required; however, Tyvek® coveralls and insect repellent should be available if exposures to spiders, flying insects, or other biological hazards are encountered.
- The following precautions and protective measures shall be implemented by Resolution employees conducting field work where the biological hazards covered by this SOP exist:

4.18.3 Insects, Spiders, and Ticks

- Chemically-treated field clothing, full-length clothing, or Tyvek® coveralls.
- Application of insect repellent to clothing and/or exposed skin.
- Routine personal checks.
- Exercise care when collecting samples and avoid reaching into areas where visibility is limited. If stung by an insect or bitten by a spider or tick, attempt to identify the attacker and notify a co-worker or someone who can help should the bite site become painful, discolored, or swollen. Stay calm and treat the area with ice or cold water. Seek medical attention if you have any reactions to the sting such as developing a rash, excessive swelling or pain at the site of the bite, or any swelling or numbness beyond the site of the bite.
- Oil of lemon eucalyptus, DEET, and Permethrin have been recommended by the Centers for Disease Control and Prevention for effective protection against mosquitoes that may carry the West Nile virus and related diseases.
- Note that DEET will reduce the effectiveness of Fire Resistance Clothing (FRC) and should not be applied to this clothing. If working in FRC, employees can apply DEET to their skin and let dry prior to putting FRC on, or use Permethrin as it has been shown not to reduce the effectiveness of FRC. Permethrin will need to be applied to FRC well in advance of the planned work.

4.18.4 Poisonous Plants

- Employees working in areas where poisonous plants exist shall wear either long sleeve clothing or Tyvek® coveralls, and disposable cotton, leather or synthetic gloves. Employees must not touch exposed skin (neck and face) with potentially contaminated gloves. Tyvek® and gloves worn to protect from exposure to poisonous plants will be treated as contaminated, removed from the body in a manner that the contamination is not spread, and placed in plastic bags for disposal.
- Personal clothing that has been exposed to poisonous plants shall be decontaminated with a poisonous plant cleanser such as Tecnu® or removed in a careful manner, bagged and washed separately from other clothing to remove urushiol.
- Work boots will be decontaminated with either soap and water or a cleansing agent such as Tecnu® cleanser.
- Remember that in the fall and winter the hazard still exists in the form of stubble and roots.
- Employees who develop a rash as a result of exposure to poisonous plants shall report the exposure immediately to their **Supervisor** or **Project Manager** who will forward the report to the RSHEM.
- For dermatitis caused by Poison Ivy, Poison Oak, or Poison Sumac, calamine lotion is effective.

4.19 Selection and Configuration of Field Clothing

4.19.1 At a minimum, employees will wear long legged pants and long sleeve shirts or Tyvek® coveralls to reduce the amount of exposed skin when biological hazards are identified at the work site. Gloves will also be worn consistent with the recommendations of the site-specific SWP, HASP and/or THA to minimize hand exposure.

4.19.2 Where ticks, chiggers, and spiders are presumed to exist, the Tyvek® or chemically-treated clothing will be taped to the work boots.

4.19.3 See 5-313-Configuration Clothing for Protection against ticks and insects for illustrations and instructions for configuring, taping, and tucking clothing.

4.19.4 Chemical Treatment of Field Clothing

- Oil of lemon eucalyptus, DEET, and Permethrin have been recommended by the Centers for Disease Control and Prevention for effective protection against mosquitoes that may carry the West Nile virus and related diseases.

- Note that DEET will reduce the effectiveness of Fire Resistance Clothing (FRC) and should not be applied to this clothing. If working in FRC, employees can apply DEET to their skin prior to putting FRC on, or use Permethrin as it has been shown not to reduce the effectiveness of FRC. Permethrin will need to be applied to FRC well in advance of the planned work.

4.19.5 Permethrin

- When selected as part of a project's PPE requirements, the Resolution **Project Manager** shall ensure that field teams wear clothing treated with the chemical Permethrin, which is an insecticide with repellent properties registered with the U.S. Environmental Protection Agency (EPA), and recommended by the CDC. Information regarding the toxicity and product safety of Permethrin is provided in *5-313-Insect Repellent Active Ingredient Product Information*. Permethrin is highly effective in preventing tick bites when applied to clothing, but is not effective when applied directly to the skin. Two options are available for Permethrin treatment of clothing worn during field work: 1) pre-treatment of fabric by the clothing manufacturer; or 2) employee treatment of their personal clothing using 0.5% Permethrin spray. Resolution strongly recommends the first option (employees obtaining pre-treated clothing) to avoid the time required, potential risk, and housekeeping issues involved with manually treating the clothing with spray. Purchase pre-treated clothing in accordance with *5-208 Personal Protective Equipment Program* and with the approval of your **Supervisor**.
- The Permethrin pre-treatment is odorless and retains its effectiveness for approximately 25 washings. After 25 washings, the pre-treated clothing will be considered no longer effective and removed from service. Clothing that has been manually treated by employees will be considered effective for 5 wash cycles.
- Also, use of clothing that has been pre-treated with Permethrin offers a reduction in the use and application of other insect repellents that must be applied directly to the skin.. Costs for clothing shall be charged to projects as a consumable item. If charging to the project is not possible, the charges should be managed as a department expense. **Supervisor** or **Department Manager** approval is required prior to purchase.
- If an employee opts not to utilize chemically pre-treated clothing while potentially exposed to insects, spiders and/or ticks, they must either: 1) wear Tyvek® coveralls taped to the boots, 2) full length clothing consisting of long legged pants and long sleeved shirts treated with an insect repellent containing Permethrin, DEET, or an organic alternative to their work clothing.

4.19.6 Manual Treatment of Field Clothing

- If clothing pre-treated with Permethrin is not available or not purchased prior to field work, employees may manually treat their clothing with Permethrin spray. The outer surfaces of all external clothing to be worn during field work should be treated with 0.5% Permethrin spray a minimum of 2 to 4 hours prior to field work (boots, trousers, shirt, jackets, rain gear; refer to Section 4.16 for selection of field clothing) in accordance with recommendations provided by the New York State Department of Health. This will likely require treatment at home or the office prior to field mobilization. Caution should be used when applying Permethrin as it is highly toxic to fish and house cats. Clothing treatment will last for approximately 5 wash cycles (check the specific instructions for the product used.)

4.19.7 Lemon Eucalyptus

- Lemon Eucalyptus is a plant-based insect repellent on the market as Repel Lemon Eucalyptus. The products have been proven to be effective against mosquitoes, deer ticks, and no-see-ums for up to six hours. Derived from Oil of Lemon Eucalyptus, this non-greasy lotion or spray has a pleasant scent and is not known to be toxic to humans. The spray or lotions will be effective for approximately two to six hours and should be reapplied every two hours to sustain protection. Lemon Eucalyptus products cannot be applied to fire retardant clothing.

4.19.8 Purchase of PPE and Repellents and Lotions

- Costs for clothing, repellents, lotions, and other PPE shall be charged to projects as a consumable item. If charging to the project is not possible, the charges should be managed as a department expense. Supervisor or Department Manager approval is required prior to purchase.
- Material Safety Data Sheets (MSDS) for the repellents, lotions, and cleansers discussed in this Procedure are not required because the repellents, lotion, and clothing are consumer products used in the manner intended for the general public. Although not required, a MSDS should be

obtained for the products used and placed into the office MSDS library and site-specific health and safety plans.

4.20 **Personal Hygiene and Body Checks**

- 4.20.1 Tick-borne diseases typically require that the tick be imbedded for four hours to begin disease transfer. The oils from poisonous plants can take up to 4 hours after exposure to penetrate the skin and react with the live proteins under the skin.
- 4.20.2 It is recommended that exposed skin be checked frequently for the presence of ticks, insects, rashes, or discolorations. External clothing should also be checked for the presence of ticks and insects; these should be retained for identification and to determine if medical treatment is needed.
- 4.20.3 Employees will shower as soon as practical after working in the field and examine their bodies for the presence of ticks, insect bites, rashes, or swollen areas. If imbedded ticks are found, they should be removed using the technique described in *5-313-Ticks*, the tick should be preserved with the date and location of the bite noted, and retained for identification if medical treatment is needed as described in Section 4.13.1 of this Procedure.
- 4.20.4 The presence of an imbedded tick, rash, or abnormal reactions will be reported as an SH&E Incident to the **Project Manager** or **Supervisor** who will forward the report to the RCSHEM for follow up.

5.0 **Records**

None.

5-315-Water, Working Around

1.0 Purpose and Scope

- 1.1 Establishes the minimum requirements and guidance for Resolution Consultants personnel assigned to projects that place them at risk of falling into water, including working ashore near to or over water.
- 1.2 This procedure applies to all Resolution Consultants employees and operations.

2.0 Terms and Definitions

- 2.1 **PFD:** Personal Flotation Device
- 2.2 **Life Jacket:** A personal flotation device that will turn over an unconscious worker in the water so their face and nose are not submerged.
- 2.3 **USCG:** United States Coast Guard
- 2.4 **TC:** Transport Canada
- 2.5 **Lifebuoy:** A throwable buoyant rescue ring with 28 M (90 feet) buoyant line attached.

3.0 References

- 3.1 Cold Water Boot Camp - <http://www.coldwaterbootcamp.com>

4.0 Procedure

4.1 Roles and Responsibilities

- 4.1.1 **Project Manager (PM)** is responsible for the overall success of a project and the performance of employees engaged in project activities. The PM shall confirm that all appropriate Safety, Health and Environmental (SH&E) procedures are identified and implemented:
 - Determining the applicability of this SOP during the planning stage of field investigation projects.
 - Allocating appropriate resources to implement the required measures.
 - Designating a field team member to implement and maintain these measures, maintain related documentation, and to communicate with appropriate parties as necessary.
 - Consulting with the purchasing department on the appropriate vendors for rentals/leases.
 - Confirm that boat/watercraft rental/leasing vendors have appropriate paperwork (licenses, insurance, maintenance records, orientations, etc.).
 - Confirming that the project is properly staffed with trained employees.
 - Developing and submitting a Health and Safety Plan, Task Hazard Analysis, and other SH&E Planning Documents for review and approval by the **Resolution Consultants Regional SH&E Manager**.
- 4.1.2 **SH&E Manager** is responsible for providing support to the **PM** and his/her designee in the evaluation of safety and health risks and the identification of applicable policies, procedures, and appropriate precautions.
 - Review all project related Health and Safety Plans, Task Hazard Analysis as required.
 - Provide access to safety records, including training records, for field staff.
 - Provide support to **PM**.
- 4.1.3 **Field Task Manager, Supervisor**
 - The **Field Task Manager (FTM)** is responsible for verifying current status of field staff's training and equipping them for the work at hand.
 - The **FTM** is also responsible for conducting daily safety meetings, performing field safety inspections, confirming that all safety issues and equipment deficiencies are properly corrected, and that the proper equipment is available to the field staff to safely meet the goals and quality objectives of the project.

4.1.4 **Field Staff**

- Employees are responsible for complying with the safe work practices specified in this policy and all other applicable Resolution Consultants SH&E policies or procedures and reporting all unsafe working conditions.
- Review, contribute to, and sign the Task Hazard Analysis prior to beginning the project and whenever new tasks or environmental changes occur.
- Confirming that their SH&E training is up to date.
- Confirming that equipment is properly maintained and functioning.
- Confirm they wear all required PPE.

4.2 **General Safety Considerations**

- 4.2.1 During project preparation, consideration shall be given to the nature of the site, the type of water hazard, the equipment being used, and the location to determine the PPE and level of emergency preparedness that is required. All projects working near water hazards shall have the appropriate SH&E Plan prepared, including task hazard analysis.
- 4.2.2 Personal protective equipment (PPE) specified in the Task Hazard Analysis (THA) is to be worn as required, to meet the specific regulations of the work area, including local and federal legislation.
- 4.2.3 Whenever there exists the possibility of falling into water, personnel shall be attired in a USCG approved Type III or Type V PFD or Life jacket. The vest shall be properly sized for the individual and shall be secured at all times. For cold water conditions (water temperature less than 55 degrees), a USCG approved Shallang suit shall be worn to protect personnel from risks of cold water immersion.
- 4.2.4 Swimming is prohibited, unless it is being conducted by certified divers in the completion of their assigned task, or to prevent a serious injury or loss of life in a person in a water/person overboard emergency.
- 4.2.5 The buddy system shall be utilized whenever there is the possibility of falling into water, in which two persons operate as a single unit in order to monitor and assist each other in performing tasks.
- 4.2.6 Conducting shoreline work alone should be avoided, unless constant communications is maintained between personnel and prior approval by the **Project Manager** is granted.
- 4.2.7 A throwable lifebuoy with required rescue line attached (Type IV flotation aid) shall be available.
- 4.2.8 Additional equipment (i.e., sounding alarms, lifting gear, or rescue boat) as required by legislation shall be immediately available to recover an individual from the water. If the shortest dimension of the water body is greater than the length of line attached to the throw buoy, a skiff or boat shall be available to facilitate a rescue.

4.3 **Personal Protective and Safety Equipment**

- 4.3.1 Personal Protective Equipment (PPE) shall be selected based on the task-specific hazard analysis. The minimum PPE required for wading in water above the knees includes:
- Personal Flotation Devices or lifejackets shall be worn by all workers who are exposed to the danger of drowning in water deep enough for the lifejacket to be effective.
 - All inflatable PFD or life jackets shall be approved and have documented regular inspections.
 - Shallang suits: In water temperatures below 55° F (regardless of air temperature) personnel are required to wear a USCG approved Shallang jacket or full flotation suit, depending on field conditions. This requirement will replace the need for a wearable PFD as these suits (if properly maintained) will provide adequate flotation.
 - Waders with slip resistant sole suitable for the substrate.
 - Eye protection (to reduce glare).
 - Wading pole (for supporting and testing the substrate before wading).
- 4.3.2 Rescue equipment shall be on-site that is appropriate to the situation (e.g., life buoys with 28 m (90 ft) of retrieval line, rescue boat, sounding device).

- 4.3.3 Blankets and an appropriate first aid kit shall be on-site.
- 4.3.4 Immersion suits, or survival suits as they are often called, can significantly improve survival time in cold water. Recognizing that hypothermia is a major factor in lives lost at sea, the U.S. Coast Guard requires that vessels operating in offshore waters north of 32 degrees North latitude carry an immersion suit for each person aboard. These suits are to be used in place of a Type I PFD in an abandon ship situation. It is recommended that personnel familiarize themselves with their use and practice donning the suit before leaving the dock. It is recommended that personnel be able to get into an immersion suit in under a minute. If necessary to abandon ship, personnel, attired in an immersion suit with head covered in a hat, should enter the water slowly, if possible, keeping their head out of the water.
- 4.3.5 Suits should be stored in a clean and dry location. Avoid stacking or compressing the suits in storage as it may result in a loss of buoyancy. Federal regulations require that immersion suits be stowed so that they are readily accessible to the individual for whom they are intended, from both the individual's normal work area and berthing area. If there is no location readily accessible to both areas, then a suit shall be stowed at each location.
- 4.4 **Land-based (shoreline/bridge/pier – includes wading)**
- 4.4.1 Use a short line and harness to prevent entry into the water, or approved PFD, when working near fluid filled tanks, ponds, lagoons, or natural waterways and stay close enough to shore to be pulled back to shore by an attendant.
- 4.4.2 Wading in a stream or water body:
- Always proceed upstream so that the wading team is walking into clear water (no turbidity caused by walking), there is good visibility for any debris floating downstream, and there is a reduced risk that the wading team will be pushed against debris or pushed into a deep hole by the current.
 - Wading in water deep enough to become submerged in will be done as a two person crew. If conditions or legislation warrant a "rescue team," then an appropriately sized crew should be used, with the rescue team stationed on the shore with the appropriate rescue equipment, as per the site-specific rescue plan.
- 4.4.3 Wading will not occur in the following circumstances:
- If the water is too turbid or too deep to see tripping hazards or deep holes.
 - If it appears the bottom is composed of soft sediments where stepping in may result in sinking, or if the bottom consists of clay where slipping is likely.
 - If large woody debris is abundant and will be difficult to step over or move around.
 - If the water is over the waist of the shortest person on the wading teaming. This does not preclude wading in water bodies that have shallow shorelines that grade into deeper waters. By not wading over waist level there will be approximately 30 cm (12 Inches) of "safety distance" on the chest waders, should a member of the wading team step or slip into a deeper area.
 - If there is a risk of the current pushing a member of the team downstream.
- 4.5 **Cold Water Operations**
- 4.5.1 Cold water operations are defined as any situation that exposes an individual to falling into water that has a temperature of 55°F (13°C) or less.
- 4.5.2 Sudden immersion in cold water can induce a gasping reaction and uncontrolled breathing which may cause the victim to ingest water and begin choking, experience cardiac arrest, and other physical body conditions all of which can result in a quick drowning.
- 4.5.3 Cold water incapacitation precedes hypothermia, making swimming and grasping for safety extremely difficult. So while death by hypothermia may occur in roughly one hour in a water temperature of 55°F (13°C), incapacitation due to failing muscle function will occur in as little as 10 minutes, so regardless of your age, physical conditioning, or ability to swim – your odds of survival are greatly enhanced if you wear a life jacket.
- 4.5.4 Resolution Consultants requires personnel to wear an approved USCG Shallang suit at all times whenever there is the risk of falling into water. Employees working in these conditions view a training

video on the physiological effects of cold water immersion found at:
<http://www.coldwaterbootcamp.com>.

4.5.5 Consideration should be given to the use of immersion of survival suits when project work involves cold water operations.

4.6 **Working on Ice**

4.6.1 Situations which expose personnel to the risk of falling onto ice covered waters. Working on water with the presence of ice either in the waterway or encroaching in from the shoreline.

4.6.2 Working in situations where ice exists shall be strictly limited due to the extreme hazards associated with falling through the ice cap, cold water immersion, and the logistical difficulties associated with executing a rescue.

4.6.3 Personnel working on ice shall be attired in a USCG approved Shallang survival suit and be supported by shore side personnel to assist in recovery in the event of a break through. Depending on the nature of the project, on-ice personnel should either wear a harness tethered back to shore, or push a flat bottom boat along on the ice and have the boat tethered back to shore.

4.6.4 Personnel working on ice covered waters should dramatically reduce vessel speed to avoid damaging propellers, shafts, and rudders. Personnel should be cognizant of shoreline ice which can prevent access to alternative ramps and docks that were considered as egress points in emergency planning.

4.6.5 Personnel should be wary that boat ramps on tidally influenced waters can flash freeze at low tide, precluding or compromising safe access and egress.

4.6.6 Extra safety equipment:

- Extra blankets should be kept on site (in a vehicle) when working on or near frozen water bodies.
- An ice pick, ice chisel, and/or ice auger should be used by a member of the crew with experience or training in identifying thin or weak ice.
- A braided rope, preferably 30 m in length.

4.6.7 **Training**

4.6.8 All field staff and Project Managers working on projects with exposure to open water shall receive training in the hazards, precautions, and rescue procedures associated with working in or over water.

4.6.9 All staff working on or near frozen water bodies shall complete Ice Safety Awareness e-learning.

4.6.10 Staff who will be working on frozen water bodies regularly or for extended periods of time should take an Ice Rescue Training course, or obtain management approval based on their level of experience/competence working on ice.

4.6.11 Staff working near cold water shall complete awareness level training on Cold Water Immersion.

5.0 **Records**

None.

6.0 **Attachments**

None.

5-406 Electrical Lines, Overhead

1.0 Purpose and Scope

- 1.1 Provides the safe work requirements to be observed where overhead power lines are present on a job site.
- 1.2 This procedure applies to all Resolution Consultants employees and operations.

2.0 Terms and Definitions

- 2.1 Types of overhead lines:
 - 2.1.1 Overhead power lines
 - 2.1.2 Structural cable supports
 - 2.1.3 Guy wires
 - 2.1.4 Cable television / communication lines

3.0 References

None.

4.0 Procedure

- 4.1 An appropriate distance must be kept between equipment and overhead utility lines.
- 4.2 Employees must contact the power line operator before work is done or before equipment is operated within 15.25 metres (50 feet) of an energized overhead power line, in order to:
 - determine the voltage of the power line, and
 - establish the appropriate safe limit of approach distance as identified by provincial/territorial regulations.
- 4.3 The safe limit of approach distances do not apply to a load, equipment, or building that is transported under energized overhead power lines if the total height, including equipment transporting it, is less than 4.15 metres (13.5 feet).
- 4.4 **Employers or CTO Managers** must formally notify (using the Overhead Electrical Lines Acknowledgement form) all subcontractors or equipment operators of an energized overhead power line before work is done or equipment is operated in the vicinity of the power line at distances less than the safe limit of approach distances and obtain the operator's assistance in protecting workers involved.
- 4.5 Employees must not place earth or other material under or beside an overhead power line if doing so reduces the safe clearance to less than the safe limit of approach distances.
- 4.6 To maintain minimum safe clearances:
 - 4.6.1 Install warning devices and signs (hang a sign from and mark all guy wires to warn traffic of low clearance; provide warning signage for all overhead services).
 - 4.6.2 Install telescopic, nonconductive posts and flagging across right-of-way at the minimum allowable clearance as allowed by regulations for the line voltage.
 - 4.6.3 Position signs or other devices to determine the "Danger Zone."
 - 4.6.4 Inform all on-site staff with the on-site clearances required.
 - 4.6.5 Beware of atmospheric conditions, such as temperature, humidity, and wind, that may dictate more stringent safety procedures.
- 4.7 Operation of heavy equipment and cranes in areas with overhead power lines represents a significant hazard to all personnel on the job site. Accidental contact with an energized line or arcing between a

high power line and grounded equipment can cause electrocution of equipment operators or nearby ground personnel, and damage to power transmission and operating equipment. Although maintaining a safe distance from all energized lines is the preferred means for control of this hazard, site conditions may not always accommodate this. If work will (or may) occur within 50 feet of any energized line, the procedures outlined below will be observed.

- 4.8 Overhead power lines will be identified on each job site before the work commences. For each identified line, the Project Manager must determine whether it is energized (and the operating voltage for energized lines), and whether work operations will require that activities with heavy equipment (excavators, loaders, cranes, etc.) will occur within 50 feet (15.25 metres) of the line. Unless verified, it will be assumed that all lines are energized.
- 4.9 Safe working distance is the minimum distance that must be maintained between any energized electrical line and any part of the operating equipment to maintain adequate safety margins and is based on the line voltage of the power line. Figure 4-1 lists the line voltages in kilovolts and the Minimum Safe Work Distance in the United States and Figure 4-2 indicates the Nominal Phase to Phase voltage rating in kilovolts for Canada. The following safe working distance criteria will be applied for all Resolution Consultants operations:

Figure 4-1: United States Overhead Line Criteria

Line Voltage (Kilovolts)	Minimum Safe Working Distance
0 – 50	10 feet
>50 – 200	15 feet
>200 – 350	20 feet
>350 – 500	25 feet
>500 – 750	35 feet
>750 – 1,000	45 feet

Source: American National Standards Institute, Publication B30.5.

Figure 4-2: Canadian Overhead Line Criteria

Column 1	Column 2
Nominal phase-to-phase voltage rating	Minimum Distance
Over 425 to 12,000	3.0 metres
Over 12,000 to 22,000	3.0 metres
Over 22,000 to 50,000	3.0 metres
Over 50,000 to 90,000	4.5 metres
Over 90,000 to 120,000	4.5 metres
Over 120,000 to 150,000	6.0 metres
Over 150,000 to 250,000	6.0 metres
Over 250,000 to 300,000	7.5 metres
Over 300,000 to 350,000	7.5 metres
Over 350,000 to 400,000	9.0 metres

Source: Canada Occupational Health and Safety Regulations Electrical Safety- Subsection 8.5(6).

4.10 Under no circumstances will any object pass closer than 3 metres to any energised, uninsulated electrical line.

4.11 Formally notify all subcontractors of Overhead Power lines.

4.12 **Acceptable Safety Procedures**

4.12.1 Where any work task will not allow the minimum safe working distance to be maintained at all times, an alternate means of protection must be identified and approved by the SH&E Department. In order of preference, acceptable procedures are

- De-energize the power line(s)/lockout by local utility authorities
- Install insulated sleeves on power lines
- Assign line spotters to assist the equipment operator

4.12.2 De-energize Power Lines

Elimination of electrical power provides the most acceptable means of ensuring safety of personnel. While temporary site power lines are under the control of the site manager (and can be de-energized locally), electrical distribution and transmission lines can be de-energized only by the owner of the line (generally the local electrical utility). Therefore, de-energizing of a line requires advance coordination with the line owner; generally, at least one week advance notice should be provided.

4.12.3 Install Insulating Sleeves

Insulating sleeves can be placed over power lines to provide a contact and arcing barrier if work must occur closer to the power lines than the accepted safe work distance. Although not as desirable as line de-energizing, the use of these sleeves can provide an acceptable alternative where electrical lines are required to remain in service.

As with de-energizing of distribution and transmission lines, placement of insulating sleeves can be performed only by the line owner. This requires advance coordination with the line owner; generally, at least one week advance notice should be provided. To install the sleeves, representatives of the line owner will require access to the job site.

4.12.4 Assign Line Spotters

A line spotter is a person located at ground level who is assigned to observe equipment operations, with the specific duty of assisting the equipment operator to ensure that no part of the equipment gets too close to an energized, unprotected electrical line.

Persons assigned to act as line spotters must meet the following requirements:

- While acting as a line spotter, no other duties may be performed (e.g., the line spotter cannot also act as the load spotter during a lifting operations).
- The spotter will have a radio or other direct means of communicating with the equipment operator at all times.
- The spotter will be positioned at a right angle to the equipment operator's line of sight to maximize the sight angles between the personnel.

Under no circumstances will any portion of a piece of equipment pass closer than 10 feet to any energized, uninsulated electrical line.

4.13 **Additional Safety Measures**

4.13.1 The following additional safety measures can be implemented as needed when working around energized power lines:

- Provide equipment with proximity warning devices. These provide an audible alarm if any part of the equipment gets too close to a line.
- Install ground safety stops. These prevent vehicles from accidentally entering hazardous areas.
- Equip cranes with a boom-cage guard. This prevents the boom from becoming energized if an electrical line is contacted.
- Utilize insulated links and polypropylene tag lines. These prevent the transmission of electricity to loads or tag line handlers if an electrical line is contacted.

NOTE: These additional safeguards are intended as supplemental protection. Use of these measures is not permissible as a substitute for maintaining the safe working distance or implementation of the procedures in Section 4.1.

4.13.2 If an electrical power line is hit or an electrical arc occurs:

- All ground personnel must evacuate IMMEDIATELY to a distance of at least 50 feet (15.25 metres). DO NOT attempt to rescue any injured person until the line can be de-energized.
- The operator should remain in the cab until the line can be de-energized and should carefully try to extricate the equipment from the power line. This may not be possible where melting of insulator material or metal has occurred.
- Contact the line owner to report the line contact and request that the line be de-energized immediately.
- Once the line has been confirmed to be de-energized, the operator can safely evacuate the cab and rescue can commence for any injured personnel.
- Contact the SH&E Department to report the incident and implement any instructions provided.

If the operator must evacuate while the line is still energized (because of fire or other life-threatening condition) he/she should jump clear of the equipment (making sure to avoid touching the equipment and the ground simultaneously), and land upright and with feet together. Once on the ground, proceed in a direct line away from the equipment using a short, shuffling gait (feet touching, sliding each foot no more than 1 foot forward at a time) to minimize shock hazard from electrical energy being transmitted through the ground.

5.0 Records

None.

6.0 Attachments

None.

5-417-Utilities, Underground

1.0 Purpose and Scope

- 1.1 Establishes requirements to ensure that underground installations are identified properly before excavation work commences.
- 1.2 This procedure applies to all Resolution Consultants employees and operations.

2.0 Terms and Definitions

- 2.1 **Underground Utilities:** All utility systems located beneath grade level, including, but not limited to, gas, electrical, water, compressed air, sewage, signaling and communications, etc.
- 2.2 **Ground Disturbance (GD):** Any indentation, interruption, intrusion, excavation, construction, or other activity in the earth's surface as a result of work that results in the penetration of the ground.

3.0 References

- 3.1 American Public Works Association, Excavator's Damage Prevention Guide and One-Call System Directory International 1990-1991, Utility Location and Coordination Committee.

4.0 Procedure

- 4.1 Ground disturbance may be conducted for a variety of purposes, including, but not limited to, exposing existing buried lines, soil sampling, remedial excavations, or installing monitoring wells or test pits.
- 4.2 Improper ground disturbance may impact a buried pipeline or utility line and cause a major release of a hazardous substance, flood, or electrocution. Serious injuries and significant property damage have resulted from insufficient/inadequate identification of underground installations during the course of ground disturbance work.
- 4.3 To control hazards associated with coming in contact with such installations, the American Public Works Association's (APWA) guidelines for the uniform identification of underground installations has been adopted.
- 4.4 **CTO Managers** are responsible for ensuring that all work, including the identification, location, and access to all underground utilities, is planned and performed in accordance with contract specifications and safety requirements.
 - 4.4.1 The planning for associated work and avoidance of contacting underground utilities shall be part of the project safety planning in the HASP.
- 4.5 The **CTO Manager or Site Supervisor** is responsible for the execution of work in accordance with this and other associated Resolution Consultants SOPs, including:
 - The review of the HASP.
 - Verification that all steps have been taken to identify existing underground utilities in the area to be disturbed.
- 4.6 **Regional SH&E Professional** provides guidance as needed.
- 4.7 **Personal Protective Equipment**
 - Long sleeved shirt and pants (coveralls/Nomex LILA for upstream oil and gas)
 - Safety toe boots
 - Hard hat
 - High-visibility clothing
 - Gloves

- Respirator with organic vapor/particulate filter cartridge (for use when the exposure exceeds the occupational exposure limit stated on the MSDS), as required
- Hydrogen Sulfide (H₂S) Monitor (for areas with known or suspected H₂S)

4.8 **Training**

- 4.8.1 Staff shall successfully complete a Ground Disturbance training course.
- 4.8.2 Some clients may also have required client-based Ground Disturbance training.

4.9 **Underground Utility Lines**

- 4.9.1 To avoid injury from electrical and other utilities on site, utility lines shall be located and marked prior to conducting any drilling or digging on site. If available, refer to site drawings or client interviews for information pertaining to utilities on site.
- 4.9.2 Types of underground lines:
- Gas line
 - Potable water line
 - Raw water line
 - Sewer line
 - Power line
 - Cable television/communication line
 - Cathodic protection lines
 - Grounding cable
 - Process piping/flow line
- 4.9.3 Prior to conducting the ground disturbance, you shall locate all pipelines and utilities that pass within (30 m) of the work area. This is your search and control area. To do so, you need to do the following:
- Notify all pipeline and utility companies, and confirm that their notification requirements are fulfilled prior to conducting a ground disturbance.
 - Identify pipelines, power lines, utilities, and irrigation canals in a 30-foot (9.1 m) zone of the work area with the owner of the utility.
 - On private property, a properly trained and competent third party utility locator shall be used.
 - Get approval for work within a right-of-way (ROW) or within 15 feet (4.6 m) of a line if there is no ROW.
 - Prepare a site map identifying the search area, the ground disturbance area, and known underground utilities.
 - Confirm that all pipelines, power lines, and utilities are marked.
- 4.9.4 Look for pipeline indicators:
- Look for warning signs where pipelines cross roads or water courses.
 - Look for cut lines, wells, tanks, or valves that may indicate the presence of pipelines.
 - Look for ground settling from previous work.
 - Talk to nearby landowners and residents.
 - Look for vegetation appearing “different” from the surrounding vegetation (e.g., greener, taller, shorter, or more brown than surrounding vegetation).

- 4.9.5 When you are working within a pipeline right-of-way, you shall get written approval from the pipeline owner prior to doing your work.
- 4.9.6 Call the pipeline owner at least two full working days before you dig so the pipeline can be located and marked.
- 4.9.7 Expose the pipeline by hand/hydrovac before digging within 15 feet (4.6 m) of the pipeline with machinery (no machinery comes may come within 2 feet [60 cm] of the pipeline) with the supervision of the owner or their representative, and call the owner at least one full day before you cover the exposed line.
- 4.9.8 During ground disturbance:
- All underground utilities shall be hand exposed or hydrovac'd within 3.3 feet (1 m) of a mark out or within the distance required by the owner of the utility before operating any mechanized equipment.
 - Make arrangements for supervision ("a Signal Person") during hand exposure.
 - If for any reason these hand excavations are temporarily filled in, mark them.
 - Make arrangements for supervision ("a Signal Person") during any mechanical excavation within 5 m of the underground utility.
 - Make arrangements for supervision ("a Signal Person") during backfilling of utilities.
 - Cutting back and shoring of excavations shall be completed to ensure that there are no cave-ins (follow *5-303-Excavation and Trenching*).
 - Do not damage utilities by shovels when hand exposing and picks should not be used.
 - Remember that all workers have the right and responsibility to refuse to carry out any work or procedures that they feel are unsafe.
 - If the ground disturbance is deeper than 3.3 feet (1 m), all crew members shall have appropriate training for excavations and trenches and shall be protected from cave-ins or sliding/rolling materials (follow *5-303-Excavation and Trenching*).
 - Remember that incidents, injuries, and near misses shall be reported immediately.
 - Review the site-specific emergency response plan.
- 4.9.9 If you hit an underground facility, stop the work immediately and notify the owner of the facility.
- The owner shall be informed of the location of the contact and the type of damage that resulted.
 - If the facility is a pipeline, the company (client) shall immediately notify the required agencies and regulatory bodies of the location of the contact and the type of damage that resulted.
 - The government agencies will require a written record and the company (client) should conduct an incident investigation into the causes and make recommendations for the future prevention of this incident.
- 4.10 **Identification of Installations**
- 4.10.1 Various forms of underground utility lines or pipes may be encountered during Resolution Consultants deployments to field sites. Damaged utilities, in particular, can present other hazards including asbestos, explosion, electric shock, scalding, etc., and they shall be avoided. The presence of damaged utilities at any work location shall be immediately brought to the attention of the site supervisor or other member of the Resolution Consultants site management team.
- 4.10.2 Guidance will be provided on the appropriate action to be taken, which could include suspension of work until the responsible utility agency is contacted and the hazard is either isolated or eliminated.
- 4.10.3 Extreme caution shall always be exercised when attempting to locate underground utilities. The location of utilities can be in some cases not consistent as shown on drawings, as indicated by the placement of surface signage, or as described by personnel. Coordination and planning of the job shall be required with the client or owner.
- Prior to digging and drilling operations, the client shall always be informed of the potential location(s) of underground utility systems.
 - If a utility permit is required from the client or owner, it shall be secured.
 - The client shall explain how the utility line may be identified—e.g., red concrete encasement.

- All underground installations shall be considered “live” and “operational” until the owner, client, or utility authority isolates any hazardous energy or deactivates the system and can demonstrate that condition.
- Where a line placement and depth is known or suspected and where there is potential for contact, hand digging, or hand auguring, instrumentation and other investigative techniques shall be used.

4.10.4 The One Call System Definition and Directory or its equivalent shall be used to prepare for excavation work in the event the identity of an underground installation(s) is unknown.

4.10.5 Line location documentation (or appropriate regional agency or company) provides a listing of companies that have registered buried facilities in the proposed work area. Some public utilities and private companies are not members of the One Call System. In order to give line operators sufficient time to respond to a request to locate, a minimum waiting period of 72 business hours is required prior to beginning work.

4.10.6 Once the underground installation has been identified, proper surface markings shall be made in accordance with the guidelines contained in this SOP or as contract-specified.

4.11 **Surface Markings**

4.11.1 Color-coded surface marks (paints or similar coatings) shall be used to indicate the type, location, and route of buried installations. Additionally, to increase visibility, color-coded vertical markers (temporary stakes or flags) shall supplement surface marks.

4.11.2 All marks and markers shall indicate the name, initials, or logo of the company that owns or operates the installation and the width of the installation if it is greater than two inches.

4.11.3 If the surface over the buried installation is to be removed, supplemental offset marking shall be used. Offset markings shall be on a uniform alignment and shall clearly indicate that the actual installation is a specific distance away.

4.12 **Uniform Color-Coding**

4.12.1 The colors and corresponding installation type are as follows unless otherwise contract-specified.

4.12.2 Red: Electric Power Lines, Cables, Conduit, and Lighting Cables

4.12.3 Yellow : Gas, Oil, Stream, Petroleum, or Gaseous Materials

4.12.4 Orange :Communication, Alarm or Signal Lines, Cables, or Conduit

4.12.5 Green: Sewers and Drain Lines

4.12.6 White : Proposed Ground Disturbance area

4.12.7 Pink: Temporary Survey Markings

4.12.8 Purple: Nonpotable Water

5.0 **Records**

5.1 The following records on the identification of and response to underground utilities will be maintained in the project files:

5.1.1 All information regarding the identification of underground installations (this information can also be transferred to the appropriate drawings and/or prints and shall be available on site).

5.1.2 Drawings and/or prints shall be maintained for the life of this project.

5.1.3 Identifying Underground Installations Checklist.

6.0 **Attachments**

None.

5-503 Blood borne Pathogen Program

1.0 Purpose and Scope

- 1.1 Define the Resolution Consultants Program for eliminating or controlling exposure to Bloodborne Pathogens on Resolution Consultants projects and activities.
- 1.2 This procedure shall be implemented on any and all projects where there is a reasonable potential for Resolution Consultants Employees and/or subcontractors to be exposed to regulated waste as defined below.
- 1.3 This procedure applies to all Resolution Consultants employees and operations.

2.0 Terms and Definitions

- 2.1 **Blood:** Human whole blood; human blood components such as plasma or platelets; and human blood products such as clotting factors.
- 2.2 **Bloodborne Pathogens (BBP):** Pathogenic microorganisms that are present in human blood and that can infect and cause disease in persons who are exposed to blood containing these pathogens including but not limited to hepatitis B virus (HBV), human immunodeficiency virus (HIV), hepatitis C, malaria, syphilis, babesiosis, brucellosis, leptospirosis, arboviral infections, relapsing fever, Creutzfeldt-Jakob disease, human T-lymphotrophic virus Type I, and viral hemorrhagic fever.
- 2.3 **Exposure Control Plan:** A plan that addresses the requirements applicable to specific Resolution Consultants projects and activities designed to eliminate or minimize employee exposure. The Exposure Control Plan may be incorporated into the project Health and Safety Plan. The Exposure Control Plan shall include:
 - 2.3.1 Exposure determination.
 - 2.3.2 Evaluation of circumstances surrounding exposure incidents.
 - 2.3.3 Accessibility to all potentially affected employees.
 - 2.3.4 Methods of compliance.

Note that in the State of California this plan shall also address exposures to airborne pathogens.

- 2.4 **Health and Safety Plan (HASP):** A document prepared for a specific project that details the hazards, precautions, emergency planning, medical, and training requirements for that project.
- 2.5 **Occupational Exposure (Exposed):** Reasonably anticipated skin, eye mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties. Employees will be considered to be potentially exposed, even though they are using the universal precautions specified for the project.
- 2.6 **Other Potentially Infectious Materials:** Body fluids and tissues including: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, amniotic fluid, saliva, and any other body fluid that is visibly contaminated with blood. When it is difficult or impossible to differentiate between body fluids, all body fluids should be treated as if they are potentially infectious.
- Note that in the State of California airborne pathogens are also considered infectious materials.
- 2.7 **Parenteral:** Refers to piercing the skin barrier (cuts, abrasions, human bites).
- 2.8 **Regulated Waste:** (1) liquid or semi-liquid blood or other potentially infectious materials; (2) contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; (3) items that are caked with dried blood or other potentially infectious materials and are capable of being released during handling; (4) objects contaminated with blood that can pierce the skin; and (5) pathological and microbiological wastes containing blood or other potentially infectious materials.
- 2.9 **Source Individual:** An individual, typically one who has been injured, whose blood or saliva has come in contact with another individual, typically one who has rendered first aid or Cardio Pulmonary Resuscitation (CPR) to the injured party.
- 2.10 **Universal Precautions:** All body fluids and materials potentially contaminated by body fluids will be considered to be infectious unless the fluids were from the person performing the clean up or decontamination activities. All employees coming in contact with another person's body fluids shall assume that the fluids are infectious and shall wear prescribed Personal Protective Equipment (PPE).
- 2.11 **Medical Director:** Resolution Consultants Medical Consultant Provider.
- 2.12 **SH&E Manager** – Resolution Consultants company safety and health manager who is responsible for tracking all exposure incidents that occur on Resolution Consultants jobsites.
- 2.13 **JV SH&E Manager** – Resolution Consultants appropriate Joint-Venture company safety and health manager (EnSafe - HS Manager or AECOM HS Manager) who is responsible for interaction with their respective employee regarding personnel medical and exposure records.

3.0 References

- 3.1 United States: OSHA 29 CFR 1910.1030 "Occupational Exposure to Bloodborne Pathogens"
- 3.2 5-003 SH&E Training
- 3.3 5-209 Hazard Assessment and Project Planning
- 3.4 5-604 Medical Records
- 3.5 5-605 Medical Surveillance Program

4.0 Procedure

4.1 Roles and Responsibilities

4.1.1 Resolution Consultants Medical Director

- Will review and maintain all medical records generated as a result of post-exposure follow-up and maintain all medical records related to the follow-up.
- Will, where appropriate, consult with Resolution Consultants' local medical providers about follow-up recommendations.

4.1.2 SH&E Manager

- Will review project-specific Exposure Control Plans (normally part of the HASP) prior to the initial project mobilization, at least annually for continuing projects, and whenever necessary to reflect modified tasks or procedures that affect occupational exposure to bloodborne pathogens.
- Will consult with the Medical Director regarding all bloodborne pathogens exposure incidents.
- Will review all incident reports and arrange for post-exposure follow-up with Resolution Consultants' local medical provider.
- Will offer recommendations on how to prevent an incident from recurring.

4.1.3 JV SH&E Manager

- Will consult with the Medical Director regarding all bloodborne pathogens exposure incidents for their respective employees.
- Will maintain training records and post-exposure follow-up information.
- Will confirm that site-specific training is conducted for all employees working at sites where regulated wastes were disposed or for employees who may be occupationally exposed while working at a facility that handles regulated wastes.
- Will confirm that either the local first aid and CPR training providers or a member of the SH&E Department conducts BBP training prior to first aid and/or CPR training.
- Will review all incident reports and arrange for post-exposure follow-up with Resolution Consultants' local medical provider.
- Will offer recommendations on how to prevent an incident from recurring.

4.1.4 Project Manager

- See that all recommendations made by the **SH&E Manager** are implemented.
- Support the **SH&E Manager** in their efforts to prevent occupational and non-occupational exposures to bloodborne pathogens.

4.1.5 Employees

- Use all PPE and universal precautions required to prevent exposure to infectious materials.
- Report potential exposure incidents to their supervisor or **Project Manager** immediately.

4.2 Potential Exposure Situations

4.2.1 Because of the nature of Resolution Consultants' work, it is very unlikely that employees will come in contact with bloodborne pathogens. However, there are a few activities within Resolution Consultants where occupational exposures to blood or other potentially infectious materials are of concern. These activities include:

- Investigations of properties that received regulated wastes.

- Site visits or audits at Treatment Storage and Disposal facilities where medical waste is handled.
 - Site visits or audits at medical or health care facilities.
 - The provision of first aid or CPR to Resolution Consultants, subcontractor, or client personnel.
- 4.2.2 Although Resolution Consultants does offer first aid and CPR training to its employees on a regular basis, providing such aid is not a specified job duty of any Resolution Consultants employee and, as such, may not technically be considered occupational exposure within the context of the OSHA Bloodborne Pathogens Standard. However, Resolution Consultants chooses to provide training, personal protective equipment, and post-exposure medical follow-up to any first aid and/or CPR - trained employee who renders first aid in the office or during field activities.
- 4.3 **Unforeseen Exposure Situations**
- 4.3.1 Occasionally, potentially infectious material is encountered during a project where none was expected; when this happens, the work shall be stopped, employee training conducted, and an exposure control plan prepared prior to resuming activities with potential exposures.
- 4.4 **Health and Safety Plan (HASP)**
- 4.4.1 A site-specific HASP shall be developed for any work activities at sites that generate, store, or have received regulated wastes (see Definition). The HASP will specify:
- Work practice controls including isolating potentially contaminated materials and regulated wastes from other materials, labeling containers, barriers, and housekeeping in the project area;
 - Universal precautions (PPE) to be used for affected activities;
 - Recognition of potentially contaminated materials; and,
 - Contact information for the Resolution Consultants Medical Director.
- 4.4.2 Resolution Consultants personnel shall also be prepared to follow any requirements related to a client's compliance program for bloodborne pathogens. This is particularly important when conducting site visits or audits at medical or health care facilities and TSD facilities where medical waste is handled.
- 4.5 **Employee Training**
- 4.5.1 All personnel who will work on projects which involve potential contact with regulated wastes will be required to attend a training class prior to the start of the project and annually for continuing projects.
- 4.5.2 Either of the following two sources of employee training will be used by Resolution Consultants to educate employees on the hazards of exposure to bloodborne pathogens:
- The local chapter of the American Red Cross or other recognized training provider.
 - Resolution Consultants' in-house training program.
- 4.5.3 **Training sessions will review the following:**
- Requirements of OSHA's Bloodborne Pathogens Standard
 - Review of Resolution Consultants' Bloodborne Pathogen Procedure (this document)
 - Situations within Resolution Consultants that may involve exposure to bloodborne pathogens
 - Bloodborne diseases and symptoms of disease
 - Means of transmission
 - Work practice controls to reduce risk
 - Use of personal protective equipment to reduce risk
 - Incident reporting
- 4.6 **Resolution Consultants' post-exposure medical follow-up procedures:**
- 4.6.1 When contracting for CPR and first-aid training sessions, Resolution Consultants will request that each session include a section on the hazards associated with exposure to bloodborne pathogens and protective measures that shall be followed when administering first aid, CPR, or other emergency medical care. At the end of the session, employees will be provided with a copy of this Procedure. The Procedure will be reviewed and a question-and-answer session will be conducted at the end of the presentation.

- 4.6.2 If the training provider cannot provide such training, Resolution Consultants will conduct a training session using a video, hand-out materials, lecture, and a question-and-answer session, prior to the start of the first aid or CPR class.
- 4.6.3 All personnel who will work on projects which involve potential contact with regulated wastes will be required to attend a training class prior to the start of the project and annually for continuing projects. The specific requirements and provisions of the project Exposure Control Plan shall be provided to each Resolution Consultants employee and Resolution Consultants subcontractor assigned to work at the project site.
- 4.6.4 Resolution Consultants will have little control over employees who have not received first aid or CPR training, but who choose to perform Good Samaritan acts. Any employee who does perform a Good Samaritan act that results in exposure to blood or other potentially infectious materials will, however, be provided with post-exposure medical follow-up as described in this Procedure.
- 4.7 **Personal Protective Equipment**
- 4.7.1 All body fluids and materials potentially contaminated by body fluids will be considered to be infectious unless the fluids were from the person performing the clean up or decontamination activities. All employees coming in contact with another person's body fluids shall assume that the fluids are infectious and shall wear prescribed PPE.
- 4.7.2 The use of PPE to prevent exposure is more appropriate for the types of occupational and non-occupational exposures Resolution Consultants employees might encounter than is the use of engineering or work practice controls that are more effectively instituted in medical care or laboratory facilities where employees are actually handling blood and other potentially infectious materials.
- 4.7.3 Personal protective equipment such as Tyvek coveralls, shoe covers, and gloves will be provided to all field team members involved in site activities where regulated wastes may be present. The specific PPE requirements will be identified in the site-specific HASP. The same type of PPE will also be available, if it is deemed necessary, for Resolution Consultants employees involved with activities at TSD facilities that handle regulated wastes.
- 4.7.4 PPE will be provided to affected employees at no cost to the employee.
- 4.8 **First Aid Kits**
- 4.8.1 All office and portable first aid kits used in the field will be equipped with several pairs of latex gloves, alcohol wipes for emergency hand washing, and a protective CPR shield. Extra supplies will be stocked in each office and in the field office or trailer for field projects that are longer than one month in duration.
- 4.9 **Universal Precautions Kits**
- 4.9.1 In those work areas where there is the potential for exposure to infectious materials, a universal precaution kit shall be readily available. The kit shall permit the clean up, neutralization, transportation, and disposal of up to 1 liter of blood or body fluids. The kit shall contain the following items at a minimum:
- Safety shield/mask combination
 - Liquid proof apron
 - Medical-grade vinyl/nitrile gloves
 - Liquid solidifier/deodorizer
 - Pickup scoop with scraper
 - Red biohazard waste bag with tie
 - Germicidal solution with dry wipe
 - Antimicrobial hand wipe
 - ID tag
 - Instructions for use
- 4.10 **Personal Hygiene**
- 4.10.1 Special provisions will be made so that hand washing facilities are available on-site for sites that are known to be contaminated with regulated wastes. Alcohol wipes will be available in the event that hand washing facilities are not immediately available.

- 4.10.2 To reduce the potential for infection, if skin contact with blood or other potentially infectious materials occurs, the exposed area should be washed with non-abrasive soap and water as soon as possible. Hand washing will also help to prevent the transfer of contamination from the hands to other areas of the body or other surfaces that may be contacted later. Even when protective gloves are worn, hands should be washed with non-abrasive soap and running water as soon as possible after the gloves are removed.
- 4.10.3 The use of an alcohol wipes should not be relied upon as the primary means of personal hygiene. Hands should be thoroughly washed with soap and running water as soon as possible.
- 4.10.4 If mucous membranes, such as the eyes, come in direct contact with blood or other potentially infectious materials, the area should be washed or flushed with water as soon as possible.
- 4.11 **Reporting Exposure Incidents**
- 4.11.1 All incidents in which an employee has been exposed to blood or other potentially infectious materials shall be reported to the employee's Supervisor and to the SH&E Manager. A Supervisors Accident/Incident Investigation Form shall also be completed by the Supervisor and returned to the SH&E Manager and JV SH&E Manager. After reviewing the report, the SH&E Manager will provide recommendations, when appropriate, for preventing recurrence of the incident.
- 4.11.2 The following are examples of exposure incidents that shall be brought to the attention of the SH&E Manager so that prompt and appropriate medical follow-up can be initiated:
- Injury (piercing, puncturing, or cutting of the skin) with a sharp object contaminated with blood or a potentially infectious material.
 - Contact of an open cut, skin abrasion, dermatitis, and the mucous membranes of the eyes, mouth, or nose with blood or potentially infectious material. This would include providing unprotected, mouth-to-mouth CPR.
 - Touching a contaminated object or surface and transferring the infectious material to your mouth, eyes, nose, or open skin.
- 4.12 **Medical Follow-Up to Exposure Incidents**
- 4.12.1 Once notified, the SH&E Manager will in turn discuss the incident with Resolution Consultants' Medical Director and/or medical provider and make arrangements for an evaluation. Prompt medical attention is important in the event of an exposure incident. If the incident occurs in the field, the employee will either be asked to visit the local hospital or if he/she chooses, return immediately to the office to visit Resolution Consultants' local medical provider.
- 4.12.2 An attempt will be made to test the affected employee, and if applicable, the source individual's blood, for bloodborne pathogens. No testing will be performed without the written consent of the exposed employee or the source individual. If initially, the exposed employee or the source individual does not consent to HIV serological testing, but does consent to HBV serological testing, Resolution Consultants will make provisions with the local medical provider to preserve the blood sample for at least 90 days in the event that after counseling efforts, the employee voluntarily consents to HIV testing.
- 4.12.3 Resolution Consultants will rely on the professional judgment of its Medical Director and/or local medical providers in the event of an exposure incident. Evaluations and follow-up procedures will be provided according to the recommendations of the United States Public Health Service (USPHS), current at the time these evaluations and procedures take place. Minimally, a post-exposure evaluation and follow-up will include the following elements:
- Documentation of the route(s) of exposure
 - Circumstances under which the exposure incident occurred
 - Identification and documentation of the source individual in the case of first aid or emergency medical treatments
 - Collection and testing of source individuals and exposed employee's blood for HBV and HIV serological status as soon as feasible and upon consent
 - Post-exposure vaccination when medically indicated, as recommended by the USPHS
 - Counseling, if necessary
 - Evaluation of reported illnesses

- 4.12.4 Any and all follow-up recommendations offered by the physician will be immediately instituted by the SH&E Manager with the guidance of the Medical Director and/or the local medical provider and at no cost to the affected employee. Testing results, employee specific follow-up activities, etc. shall be considered personal in nature and will be handled according to the JV specific guidelines (EnSafe specific or AECOM specific) by the respective JV SH&E Manager. Repeat testing, counseling, and follow-up, if recommended, will also be provided at no cost to the employee. Resolution Consultants will rely on the Medical Director and/or the local medical provider to provide counseling to employees concerning infection status, including results of and interpretation of medical tests and advising the employee about the protection of personal contacts.
- 4.12.5 All medical providers shall submit to Resolution Consultants' Medical Director and the affected employee a written opinion of the post-exposure evaluation within 15 days of the completion of the evaluation.
- 4.12.6 All medical records generated as a result of the post-exposure evaluation will be retained in the office of the Medical Director under lock and key and will be maintained with the strictest confidentiality.
- 4.13 **Hepatitis Vaccination**
- 4.13.1 Prior to performing field investigations where regulated wastes are stored, processed, or known to have been disposed of, Resolution Consultants will consult with the Medical Director and/or the local medical providers to determine if a hepatitis A or B vaccination is appropriate given the site conditions and the proposed scope of work. Where possible the first Hepatitis B vaccinations will be given prior to working at sites with known, potential exposures.
- 4.13.2 Although trained Resolution Consultants employees may provide first aid or CPR for injuries resulting from workplace accidents, Resolution Consultants employees do not provide medical assistance as part of their job or on a regular basis. Therefore, pre-exposure hepatitis vaccinations will not typically be performed for first-aid or CPR trained individuals.
- 4.13.3 Post-exposure hepatitis vaccination will be offered to employees involved in an exposure incident within 24 hours of possible exposure.
- 4.13.4 The vaccinations discussed above shall be provided to Resolution Consultants Employees at no cost to the employee.
- 4.14 **Housekeeping**
- 4.14.1 Other than through the provision of first aid or CPR, there is no potential for occupational exposure to blood or other potentially infectious materials within any of the Resolution Consultants offices. Therefore, the housekeeping requirements and requirements for warning signs and labels contained in the OSHA Bloodborne Pathogens standard are not applicable to our office operations.
- 4.14.2 When working at a site where regulated wastes have been disposed of, the specific housekeeping and warning sign requirements will be prescribed by the client and/or in the site-specific HASP.
- 4.14.3 When working at a client's facility, Resolution Consultants will assume the facility is in complete compliance with all the requirements of the Bloodborne Pathogens Standard and will observe all housekeeping requirements, wear required PPE, and acknowledge all warning signs and labels as specified in the client's plan. If the client does not have an effective plan, Resolution Consultants will prepare a plan as part of the project HASP.
- 4.15 **Regulated Waste Generated by Resolution Consultants**
- 4.15.1 Any regulated waste generated by Resolution Consultants as a result of first aid activities or clean up of potentially infectious material will be collected in sealed, watertight containers and disposed of according to the Host Employer's BBP program or transported to a local fire station or hospital for proper disposal.
- 4.16 **Material Decontamination**
- 4.16.1 Any areas or equipment that are contaminated by potentially infectious material will be decontaminated using a 10% solution of household bleach.
- 4.17 **Procedure and Plan Review**
- 4.17.1 This procedure will be reviewed at least annually and whenever necessary to reflect new or modified tasks and procedures within Resolution Consultants which may affect occupational exposure to bloodborne pathogens.

- 4.17.2 All Exposure Control Plans for projects extending over one year shall be reviewed annually by the SH&E Manager.

5.0 Records

- 5.1.1 Each JV SH&E Manager will maintain records and provide copies of the records to the Medical Director, related to bloodborne pathogens in accordance with the provisions of the standard and 5-604 *Medical Records*.
- 5.1.2 Records maintained in accordance with this Procedure will include bloodborne pathogens exposure incidents, post-exposure follow-up, vaccination status, and training for all employees with potential occupational exposure. Medical records will be maintained in the office of the Medical Director for the term of employment plus 30 years. Training and incident investigation documents shall be maintained by the JV SH&E department for the term of employment or 3 years whichever is longer.
- 5.1.3 Employee medical and training records required by this Procedure shall be provided upon request for examination and copying to the subject employee, to anyone having written consent of the subject employee, or to State, Province, or Federal Occupational Safety and Health regulatory agencies.
- 5.1.4 Employees may request and obtain copies of their medical records from the Medical Director.
- 5.1.5 If Resolution Consultants ceases to do business, Resolution Consultants shall notify the OSHA Area Director, at least 3 months prior to the disposal of the medical records and, if required by the Director to do so, transmit them to the OSHA Area Director within that 3-month period.

5-507-Hazardous Materials Communication / WHMIS

1.0 Purpose and Scope

- 1.1 Provides a Hazard Communication Program so that Resolution employees are informed of the hazards of the chemicals to which they may be exposed in the course of their work by way of container labeling and other forms of warning, material safety data sheets (MSDS), and employee training.
- 1.2 This procedure applies to all Resolution JV Partner employees and operations.
- 1.3 The program applies to the use of any hazardous substances which are known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency.

2.0 Terms and Definitions

A complete list of definitions can be found in their entirety in the HMR, the TDG Regulations, and the IATA DGR.

- 2.1 **Acute Effect:** An adverse effect on the human body with immediate onset of symptoms.
- 2.2 **Article:** A manufactured item: (1) which is formed to a specific shape or design during manufacture; (2) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and, (3) which does not release or otherwise result in exposure to, a hazardous chemical, under normal conditions of use.
- 2.3 **Carcinogen:** Those chemicals appearing in any of the following reference sources are established as carcinogens for hazard communication purposes:
- National Toxicology Program (NTP) Annual Report on Carcinogens.
 - International Agency for Research on Cancer (IARC) Monographs, Volumes 1-34. Note: The Registry of Toxic Effects of Chemical Substances published by NIOSH indicates whether a substance has been found by NTP or IARC to be a potential carcinogen.
- 2.4 **Chemical Name:** The scientific designation of a substance in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry or the system developed by the Chemical Abstracts Service.
- 2.5 **Chronic Effect:** An adverse effect on the human body with symptoms which develop slowly over a long period of time or which frequently recur.
- 2.6 **Combustible Liquid:** Any liquid having a flash point at or above 100°F (37.8°C) but below 200°F (93.3°C), except any mixture having components with flash points of 200°F (93.3°C), or higher, the total volume of which makes up 99% or more of the total volume of the mixture.
- 2.7 **Common Name:** Any designation or identification such as code name, code number, trade name or brand name used to identify a substance other than by its chemical name.
- 2.8 **Container:** Any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank or the like that contains a hazardous chemical. For purposes of this Safety Operating Procedure (SOP) and Occupational Safety and Health Administration (OSHA) standard, pipes or piping systems, and engines, fuel tanks, or other operating systems in a vehicle are not considered to be containers.
- 2.9 **Establishment:** Any separate and distinct Resolution office, laboratory or other company facility.
- 2.10 **Exposure:** Any situation arising from work operations where an employee may ingest, inhale, absorb through the skin or eyes or otherwise come into contact with a hazardous substance.
- 2.11 **Flammable:** A substance that falls into one of the following categories:
- **Flammable Aerosol:** An aerosol that when tested by the method described in 16 CFR 1500.45, yields a flame projection exceeding 18 inches at full valve opening or flashback (a flame extending back to the valve) at any degree of valve opening;
 - **Flammable Gas:** A gas that at ambient temperature and pressure:

- Forms a flammable mixture with air at a concentration of 13% of volume or less; or
 - Forms a range of flammable mixtures with air wider than 12% by volume, regardless of the lower limit.
 - **Flammable Liquid:** Any liquid having a flash point below 100°F (37.8°C), except any mixture having components with flash points of 100°F (37.8°C) or higher, the total of which make up 99% or more of the total volume of the mixture.
 - **Flammable Solid:** A solid, other than a blasting agent or explosive as defined in 8 CCR 5237(a), that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change or retained heat from manufacturing or processing or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard.
 - A chemical shall be considered to be a flammable solid if, when tested by the method described in 16 CFR 1500.44, it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.
- 2.12 **Flash Point:** Minimum temperature of a liquid at which it gives off sufficient vapors to form an ignitable mixture with the air near the surface of the liquid or within the container used.
- 2.13 **Hazardous Chemical:** Those chemicals appearing in any of the following reference sources are established as hazardous chemicals for hazard communication purposes.
- 29 CFR Part 1910, Subpart Z, Toxic and Hazardous Substances, OSHA.
 - Hazardous Products Act, R.C.S. 1985, c. H-3, section 2, Canada
 - For operations within the state of California, the list of hazardous substances prepared by the California Director of Industrial Relations pursuant to Labor Code Section 6382. The concentrations and footnotes, which are applicable to the list, shall be understood to modify the same substance on all other source lists or hazard determinations set forth in § 8 CCR 5194(d)(3)(B) and (d)(5)(D).
- 2.14 **Hazardous Substance:** A hazardous chemical or carcinogen, or a product or mixture containing a hazardous chemical or carcinogen provided that:
- The hazardous chemical is 1% or more of the mixture or product or 2% if the hazardous chemical exists as an impurity in the mixture; or
 - The carcinogen is 0.1% or more of the mixture or product.
 - Manufacturers, importers and distributors will be relied upon to perform the appropriate hazard determination for the substances they produce or sell.
- 2.15 The following materials are not covered by the Hazard Communication Standard:
- Any hazardous waste as defined by the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 USC 6901 et seq.) when subject to regulations issued under that act by the Environmental Protection Agency.
 - Tobacco or tobacco products
 - Wood or wood products. Note: Wood dust is not exempt since the hazards of wood dust are not “self-evident” as are the hazards of wood or wood products
 - Consumer products (including pens, pencils, adhesive tape) used in the work place under typical consumer usage
 - Articles (i.e. plastic chairs)
 - Foods, drugs, or cosmetics intended for personal consumption by employees while in the work place
 - Foods, drugs, cosmetics in retail store packaged for retail sale
 - Any drug in solid form used for direct administration to the patient (i.e., tablets or pills)

- 2.16 **Hazardous Substance Inventory (HSI):** A listing of all chemicals stored or used at an office or project site. Note that the HSI may be imbedded in a project Health and Safety Plan.
- 2.17 **Immediate Use:** Means that the hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.
- 2.18 **MSDS:** A material safety data sheet prepared pursuant to state and federal regulations, OSHA Form 174 and Canada regulations (Controlled Products regulations, schedule 1).
- 2.19 **MSDS Administrator:** The individual designated by the Office Manager to maintain the additional establishment-specific HSI and the MSDS binder required if that establishment uses or stores hazardous substances.
- 2.20 **NFPA:** A system of categories, colors and numbers was created to provide basic hazard information. It enables firefighters and other emergency personnel to easily decide whether or not to evacuate an area or proceed with emergency control operations. The three principal categories of identification are Health, Flammability and Instability. A numerical range of "0 to 4" indicates the severity of the hazard. A "4" indicates the most severe and a "0" indicates a minimal hazard.
- 2.21 **Mixture:** Any solution or intimate admixture of two or more substances which do not react chemically with each other.
- 2.22 **Reactivity:** A measure of the tendency of a substance to undergo chemical reaction with the release of energy.
- 2.23 **Solubility:** The ability of substance to blend and mix uniformly with another.
- 2.24 **Specific Gravity (density):** Ratio of the weight of a substance to the weight of the same volume of another substance. As used in this directive, specific gravity or density refers to the weight of substance as compared to the weight of an equal volume of water.
- 2.25 **Vapor Density:** The weight of a vapor-air mixture resulting from the vaporization of a volatile liquid at equilibrium temperature and pressure conditions, as compared with the weight of an equal volume of air under the same conditions.
- 2.26 **WHMIS:** The Workplace Hazardous Materials Information System (WHMIS) is Canada's national hazard communication standard. The key elements of the system are cautionary labelling of containers of WHMIS "controlled products", the provision of material safety data sheets (MSDSs) and worker education and training programs.

3.0 References

None.

4.0 Procedure

- 4.1 All employees have a right to, and should, know the properties and potential hazards of substances to which they may be exposed.
- 4.2 Should Resolution assign employees that do not read and speak English to tasks with chemical exposures, communications will be provided in the language understood by that employee.
- 4.3 **Hazardous Waste Exemption**
- 4.3.1 In the U.S., hazardous wastes are excluded from the state and federal Hazard Communication standards. However, Resolution employees who handle or are otherwise exposed to hazardous wastes are covered by the requirements of the OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) standard at 29 CFR 1910.120 – Hazardous Waste Operations And Emergency Response. This standard requires that:
- Employees receive 40-hour initial and 8-hour annual SH&E training; and that
 - Information on the hazards of hazardous wastes be documented in a site-specific Health and Safety Plan (HASP) and communicated to all employees in site-specific briefing on-site training required by the standard.

- 4.3.2 Therefore, Resolution HAZWOPER projects are not required to comply with the requirements of this SOP as they relate to the hazardous wastes that are present at those project sites.
- 4.3.3 A Resolution's HASP requirements are specified in *5-509-Hazardous Waste Operations and Emergency Response*.
- 4.4 **Hazardous Substance Inventory**
- 4.4.1 Establishment-Specific HSI
- If an Resolution establishment uses or stores additional hazardous substances, an establishment-specific HSI must be maintained at that establishment.
 - If it is determined that an office-specific HSI is needed, the Resolution **Office Manager** shall assure that one is developed and maintained by someone appointed as the establishment's MSDS Administrator.
 - The content of the office-specific written inventory shall be updated as new hazardous substances are procured for, or removed from, the establishment and shall be verified by the **Regional SH&E Manager** through regular inspections of the establishment.
 - In order to meet the 30-years-after-employment-termination record retention requirement, the office-specific HSIs shall be treated as a permanent record.
- 4.5 **Material SAFETY Data Sheets**
- 4.5.1 Establishment-Specific MSDS Inventory
- If it is determined that an Resolution establishment is required to maintain an establishment-specific HSI ,MSDSs for those specific hazardous substances must be maintained on file at that establishment.
 - The **Regional SH&E Manager** shall audit the local office program for MSDS request and maintenance and report deficiencies to the appropriate management level, as necessary, to assure compliance with this SOP.
- 4.5.2 Field Project Sites and Client Facilities
- The **Project Manager** and/or the **Site Safety Officer** shall access or obtain, and maintain copies of MSDS from:
 - All Resolution subcontractors bringing chemicals onto the project site; and
 - The client, for all of the client's chemicals to which Resolution or Resolution subcontract employees are potentially exposed.
- 4.5.3 Employee Access to MSDSs
- MSDSs should be maintained at the local establishment that uses that hazardous substance. Copies of the MSDS should be made available to the employee upon request to the office's MSDS Administrator.
- 4.5.4 Field Access to MSDSs
- When hazardous substances are brought into the field, the user must assure that a copy of the MSDS for that substance accompanies it and is available at the field location where it is to be used.
- 4.5.5 MSDSs for Resolution Products
- It is unlikely that Resolution activities would create a chemical for which a new MSDS were needed. If such a chemical were created, the Corporate SH&E Department shall work with the appropriate operations groups to draft, review, and publish the new MSDS.
- 4.5.6 Content of the Material Safety Data Sheet
- As a minimum, the MSDS must contain the following information:
 - The name, address, and telephone number of the source of the product or material, preferably those of the manufacturer
 - The trade name and synonyms of the product or material

- Chemical names of hazardous ingredients, including, but not limited to, those in mixtures
- An indication of the percentage, by weight or volume, which each ingredient of a mixture bears to the whole mixture
- Physical data pertaining to the product or material, including boiling point (in °F); vapor pressure (in mm of mercury); vapor density of gas or vapor (air = 1); solubility in water (in percent by weight); specific gravity of material (water = 1); percentage volatile by volume (at 70 °F); evaporation rate for liquids (either butyl acetate or ether may be taken as 1); and appearance and odor
- Fire and explosion hazard data pertaining to the product or material, including flash point (in °F); flammable limits (in percent by volume in air); suitable extinguishing media or agents; special fire fighting procedures; and unusual fire and explosion hazard information
- Health hazard data pertaining to the product or material, including exposure limits, effects of overexposure and medical conditions aggravated by exposure, and emergency and first-aid procedures
- Reactivity data, including stability, incompatibility, hazardous decomposition products, and hazardous polymerization
- Procedures to be followed and precautions to be taken in cleaning up and disposing of materials leaked or spilled
- Special protection information, including use of personal protective equipment, such as respirators, eye protection, and protective clothing, and ventilation or other control measures
- Special precautionary information about handling and strong
- Any other general precautionary information
- MSDSs that do not contain this information shall be returned to the distributor or manufacturer to be updated.

4.5.7 Trade Secrets

- Some hazardous substance suppliers may claim the information requested on MSDSs is proprietary and not provide the information to Resolution.
- When MSDSs supplied to the Resolution Regional SH&E Manager indicate that proprietary information has been withheld, the Regional SH&E Manager will either obtain the necessary information to make a hazard assessment or reject the material for use within Resolution.

4.6 Labeling

4.6.1 Containers of hazardous substances used or stored in each Resolution establishment must be labeled, tagged or marked with the following information:

- Identification of the hazardous substance(s)
- Appropriate hazard warnings
- Name and address of the manufacturer, importer or other responsible parties
- Safe Handling Instructions
- Statement that an MSDS is available for the product

4.6.2 Labels on containers shall not be removed or defaced. Labels or other forms of warning shall be legible, in English and French (Canada), and prominently displayed on the container.

4.6.3 Any failure to have the appropriate labeling information on a container at any time will be cause to suspend use of the product until the container is properly labeled.

4.6.4 Carcinogen Labeling

- Chemicals which have been indicated as positive or suspect carcinogens by either OSHA, ACGIH, the International Agency for Research on Cancer (IARC) (World Health Organization), or the National Toxicology Program (NTP) will be considered to be carcinogenic for purpose of the HCS. Those chemicals identified as being “known to be carcinogenic” by NTP must have carcinogen warnings on the label and information on the MSDSs.

4.6.5 Stationary Process Containers

- If there is stationary process equipment within a work area, signs, placards, process sheets, batch tickets, operating procedures, or other such written materials may be used in lieu of fixed labels on the containers, as long as the alternative method conveys the appropriate hazard information. The written materials shall be readily accessible to the employees in the work area.

4.6.6 Portable Containers

- Portable containers of hazardous substances need not be labeled when the substance is transferred from labeled containers and is intended for immediate use of the employee who performs the transfer.
- Containers of hazardous substances transferred from labeled containers and not intended for the immediate use of the employee performing the transfer shall be labeled with the chemical name and a hazard warning label in accordance with the National Fire Protection Association's (NFPA) 704M Hazard Identification System shall be attached.

4.7 Chemical Storage

4.7.1 Hazardous chemicals are to be stored in their original, labeled containers with the lids securely closed and taped if possible. Flammable and combustible materials must be stored in fire impervious cabinets in designated stockroom areas. Chemicals must be stored in compliance with instructions provided on their labels, MSDS, or the manufacturer's specifications.

4.7.2 All hazardous chemicals must be stored in a manner that prevents spillage and leakage from exposing people or the environment to the chemical.

4.7.3 Hazardous chemicals shall not be stored with foods or beverages. Food and beverages shall not be consumed in areas where hazardous chemicals are used or stored.

4.8 Chemical Use in Offices

4.8.1 In general, hazardous substances should not be taken into office areas, conference rooms, or break areas. If this general requirement is infeasible, contact the SH&E Department for guidance.

4.8.2 General exceptions to this rule are the following:

- Liquid paper
- Toner
- Cleaners
- Isobutylene calibration gas
- pH calibration solutions for instruments

4.9 Employee Information and Training

4.9.1 Each Resolution employee who handles or is exposed to hazardous substances must be provided information and training on hazardous substances in their work area.

- At the time of their initial assignment
- Whenever a new hazard is introduced into their work area

4.9.2 As a minimum, the training requirements apply to Resolution personnel in the following job categories:

- All personnel who perform field work that involves the use of, or potential exposure to, hazardous substances
- Laboratory Employees

4.10 Initial Training Content

4.10.1 The Initial Training will provide instruction in the following:

- Methods and observations that may be used to detect the presence or release of a hazardous substance in the work area (such as personal monitoring, visual appearance or odor of hazardous substances being released, etc.);

- The physical and health hazards of substances in the work area and measures and procedures Resolution has implemented to protect employees; and
 - The details of this hazard communication program (SOP), including an explanation of the labeling system and the MSDS, and how he/she can obtain and use appropriate hazard information.
- 4.10.2 The Initial Training will also inform the employee of the following:
- Any operations in their work area in which hazardous substances are present
 - Location and availability of this written hazard communications program (SOP)
 - Their right to personally receive information regarding hazardous substances to which they may be exposed
 - Their right to have their physician receive information regarding hazardous substances to which they may be exposed
 - Their right against discharge or other discrimination (in California) due to the employee's exercise of rights afforded pursuant to provisions of the California Hazardous Substances Information and Training Act
- 4.11 **Periodic Training and Training for Non-Routine Tasks**
- 4.11.1 Additional training will be provided to employees who have received initial training whenever:
- A new hazardous substance is introduced into their work area
 - A new or revised MSDS is received, which indicates significantly increased risks to employee health as compared to those stated on the previous MSDS
 - Non-routine tasks are performed, which will potentially result in exposure to hazardous substances, or exposure under circumstances, which were not addressed during initial training
- 4.11.2 Supervisors, in coordination with their **Regional SH&E Manager**, shall provide such training through an explanation of the information on the contents of the MSDS for that substance.
- 4.11.3 When training their employees, supervisors shall explain:
- Any health hazards associated with use of the substance or mixture
 - Proper precautions for handling
 - Necessary personal protective equipment or other safety precautions to prevent or minimize exposure
 - Emergency procedures for spills, fire, disposal, and first aid
- 4.11.4 For most projects involving field work, this periodic training requirement will be facilitated through the implementation of the site specific HASP that has been developed for the project.

4.12 **Documentation of Initial and Periodic Training**

4.12.1 All training required by this SOP shall be documented at the time it is performed by having the employee sign a copy of a training attendance sheet.

4.13 **Chemical Usage**

4.13.1 Prior to using any chemical, a Task Hazard Analysis (THA) shall be completed by the employees assigned to use the chemical. The analysis will identify the hazards associated with the tasks to be performed and prescribe the Personal Protective Equipment (PPE) to be used.

4.14 **Office Specific Written Program**

4.14.1 Each office or location using or storing hazardous materials will develop a written office/ location-specific Hazard Communication/WHMIS Program. If the local office decides to implement the requirements of the standard in any way that differs from this procedure, they shall verify the changes with the SH&E department, document the changes, and communicate the differences to all affected employees.

4.14.2 For Canadian operations, all relevant MSDS must be current (no more than 3 years) and readily available (in French and English) for all hazardous materials.

4.15 **Canada-specific**

4.15.1 Consumer products are exempt from supplier labels and MSDS requirements. Some cleaning solvents may be packaged as consumer products and these must be labelled in accordance with the Consumer Product Act requirements.

4.15.2 In addition to the labelling of storage containers in the workplace, the contents of process piping (including valves), process vessels and reaction vessels are required to be identified through the use of colour coding, labels, placards or other modes of identifications that must be communicated to workers through training programs. It is very important for employees to be aware of and understand Client labelling requirements for these types of process systems.

4.16 **Roles and Responsibilities**

4.16.1 **Regional SH&E Managers will:**

- Audit their regional offices to assure that they maintain an establishment-specific Hazardous Substance Inventory (HSI).
- Audit their regional offices to assure that if an establishment-specific HSI is required, that MSDSs are available for each substance listed on the HSI.
- Provide interpretation of MSDSs and hazard information for HMIS labels/NFPA labels and other information to assist in training employees.
- Provide hazard communication training to Resolution employees and file documents of this training in the Corporate SH&E office.
- Review MSDS for adequacy of completion to meet the OSHA and Canadian standard and returning them to supplier, if necessary.

4.16.2 **Office Managers will:**

- Have an operations-specific, written hazard communication program which at least describes how the requirements of this Procedure and the US OSHA and Canadian Hazard Communication requirements for labels and other forms of warning, material safety data sheets, and employee information and training will be met.
- Appoint an MSDS administrator for their establishment if they store or use hazardous substances.
- Confirm, if required, that the MSDS Administrator maintains an HSI for their establishment.
- Confirm that MSDS are available for all substances listed on their establishment's HSI.
- Confirm that a copy of this Procedure and the site-specific MSDS are available to all employees. Employees shall be instructed in the location of this Procedure and the MSDS.
- Confirm that all employees in their office affected by the HAZCOM standard are provided with the appropriate training, including new employees.

4.16.3 **Project Managers (field task managers, supervisors) will:**

- Confirm that all employees under their supervision have received the initial and periodic training required by this SOP prior to assigning employees to tasks involve the use of, or potential exposure to, hazardous substances.
- Notify employees of hazardous substances covered by this SOP that are used in their work area.
- Determine the potential fire, toxic, or reactivity hazards which are likely to be encountered in the handling or utilization of a hazardous substance and will communicate this information to their affected employees, before any are permitted to work with it.
- Confirm that an MSDS is available for each hazardous substance used, or potentially encountered, in the work areas or on the projects that are under their supervision.
- Notify subcontractors (working for Resolution) of any hazardous substances that are used or stored by Resolution to which the subcontractor's employees may be exposed.
- Notify clients or property owner/operators of chemicals brought onto their property by Resolution or Resolution's subcontractors.
- Request MSDSs from all subcontractor organization for the relevant chemicals they bring onto an Resolution controlled site.

4.16.4 **Employees will:**

- Confirm that they have received appropriate hazard communication training prior to working with materials that fall under the standard.
- Only work with materials for which they have been instructed on how to find an MSDS and how to work with that material safely.
- Provide a copy of all MSDSs received to the MSDS Administrator at their facility.
- Verify that an MSDS is available in their work area for each hazardous substance that they use.
- Confirm that containers of hazardous substances that they use are properly labeled.

5.0 Records

None.

6.0 Attachments

None.

5-510-Hearing Conservation Program

1.0 Purpose and Scope

- 1.1 Establishes procedures to confirm that personal noise exposure remains within acceptable limits and establishes the requirements of an acceptable hearing conservation program.
- 1.2 This procedure applies to all Resolution Consultants North America-based employees and operations.

2.0 Terms and Definitions

- 2.1 **Decibel (dB):** Logarithmic unit of measurement of sound level.
- 2.2 **Action Level:** An eight-hour, time-weighted average of 85 decibels measured on the A-scale, slow response, or equivalently; a noise dose of 50 percent.
- 2.3 **Standard Threshold Shift (STS):** When one's hearing threshold has changed (relative to the baseline audiogram) an average of 10 dB or more at 2000, 3000, or 4000 Hz in either ear).
- 2.4 **Noise Reduction Rating (NRR):** The measure, in decibels, of how well a hearing protector reduces noise, as specified by the Environmental Protection Agency.

3.0 References

None.

4.0 Procedure

4.1 Roles and Responsibilities

4.1.1 Regional SH&E Managers or their designate

- Provide access to initial and refresher hearing conservation training.
- Inform employees of noise monitoring results when full-shift noise exposure is at or above the action level.
- Designate areas and tasks where employees' exposure is at or above the action level.
- Conduct noise monitoring, as applicable, and support hazardous noise assessment/evaluation efforts.

4.1.2 Project or Office Managers

- Implement the hearing conservation program.
- Confirm that a hazardous noise assessment/evaluation has been conducted.
- Confirm that a hazardous noise assessment/evaluation is conducted when a change in equipment, procedures, or personnel may increase employee exposure to noise.
- Implement engineering controls to reduce noise levels when such measures are considered feasible and when required by regulation.
- Purchase, monitor, and replenish for employees' use a supply of hearing protection devices with a minimum Noise Reduction Rating (NRR) of 26 dBA.
- Confirm that individuals included in the program receive training and that the training meets the criteria outlined in this program.
- Investigate and implement corrective action to all reports of nonconformance with this procedure, including reports of standard threshold shifts or employees' failure to wear hearing protectors in designated areas.



4.1.3 **Supervisors**

- Maintain an awareness of the noise levels in work areas for which he/she is responsible.
- Place warning signs in areas where sound levels would require the use of hearing protectors.
- Request that a hazardous noise assessment/evaluation be conducted when a change in equipment, procedures, or personnel may increase employee exposure to noise.
- Confirm that all employees are aware of the requirements for hearing protection for any designated area or task.
- Enforce the use of hearing protection by employees in designated areas and for designated tasks.

4.1.4 **Employees**

- Comply with the requirements of the Hearing Conservation program.
- Wear hearing protection devices in designated areas or for designated tasks.
- Inspect and maintain hearing protection devices.
- Report any suspected change in noise levels of work area to supervisor.
- Report any signs or symptoms experienced that could be the result of overexposure to noise to supervisor.
- Participate in audiometric testing and hearing protection training when required.

4.2 **Requirements**

4.2.1 The requirements of this procedure apply to all locations/facilities/projects where employee noise exposure may equal or exceed 50 percent of the allowable noise dose or Permissible Exposure Limit (PEL). Table 1 provides information relative to the current PEL for noise exposure expressed as a time-weighted average.

Table 1. Permissible Exposure Limit

SOUND LEVEL (dBA)	TIME (hours)
85	8
90	4
95	2
100	1
105	0.5
110	0.25
115	0.125

4.2.2 Table 2 provides information relative to the Action Level (or 50 percent allowable noise dose) expressed as a time-weighted average. The action levels outlined in the table below and PELs described in Table 1 are calculated without regard to the protection afforded by the use of hearing protectors.

Table 2. Action Levels for Hearing Conservation Program

SOUND LEVEL (dBA)	TIME (hours)
85	4
90	2
95	1
100	0.5
105	0.25



4.3

110	0.125
115	0.0625

Training Program

4.3.1 All employees with potential exposure above the action levels established in Table 2 of this procedure or who otherwise utilize any type of hearing protector will participate in a hearing conservation training program.

4.3.2 Training Objectives

4.3.3 The initial and subsequent annual hearing conservation training will address, at a minimum, the following topics:

- The effects of noise on hearing, recognizing hazardous noise, and symptoms of overexposure to hazardous noise.
- When and/or where hearing protectors are required to be worn.
- The purpose of hearing protectors.
- The advantages, disadvantages, and effectiveness of various types of protectors.
- Instructions on how to select, use, fit, and care for hearing protectors.
- The purpose of audiometric testing, including an explanation of the test procedures.
- Hearing Conservation Program requirements and responsibilities.

4.3.4 Hearing protection training is conducted biannually for all affected employees or more frequently for employees who do not properly use hearing protectors or otherwise fail to comply with this policy.

4.4 Audiometric Testing

4.4.1 All Resolution Consultants personnel with exposure greater than the action level may be enrolled in the medical surveillance program and undergo a baseline audiogram. Thereafter, annual audiograms will be compared with the baseline exam.

4.4.2 Enrolled employees will receive audiograms during their exit physicals.

4.4.3 When a Standard Threshold Shift (STS), as identified by the Resolution Consultants Medical Consultant, is noted between the last valid baseline and the annual audiogram, the following steps will be taken:

- A retest will be conducted within 30 days to confirm the STS. The employee will not be exposed to workplace/hobby noise for 14 hours or will be provided with adequate hearing protection prior to testing.
- If the STS persists, ear protection will be upgraded to one with a greater NRR. The minimum NRR will be 26 dBA.
- The employee will be counseled and Resolution Consultants will obtain information regarding the employee's possible noise exposure away from the workplace or existing ear pathology.
- Qualified medical personnel will review the audiograms. This group will determine the need for a medical referral.
- The employee will be notified in writing by either the SH&E Department or the Resolution Consultants Medical Provider of the STS, within 21 days of determination, as required by regulation.
- The employee's supervisor will be notified of the shift in hearing threshold.

4.4.4 If the employee who has experienced an STS is exposed to 85 dBA for eight hours or 80 dBA for 12 hours, mandatory use of ear protection is required.

4.5 Monitoring of Noise Levels

4.5.1 As deemed necessary by an SH&E Professional, or a Project Health and Safety Plan, Resolution Consultants will periodically monitor personal and area noise levels using noise dosimetry and/or sound level meters.



4.6 Hearing Protectors

4.6.1 Selection of appropriate hearing protectors must be based on actual or anticipated exposure levels. At a minimum, hearing protectors must provide a level of protection that brings actual or anticipated exposure below the PEL established for the time period shown in the table above. Additional information relative to hearing protector use is as follows:

- Hearing protection will be mandatory for all employees exposed to 85 dBA for eight hours.
- Hearing protection will be mandatory for all employees working in any area that has not been evaluated for noise exposure and the ambient noise level in the area is such that you must raise your voice to have a normal conversation with someone less than four feet from you and/or when within 25 feet of an operating piece of heavy equipment.
- Hearing protection will be mandatory for all employees who work on or near heavy equipment unless personal dosimetry or other techniques have been used to document actual exposure.
- Hearing protectors will be made available to all employees who may be exposed to 85 dBA for eight hours.
- Hearing protection will be mandatory for all employees exposed to 85 dBA for any period of time and who have experienced an STS.

5.0 Records

5.1.1 Noise exposure measurement records will be retained for three years at the project/facility.

5.1.2 Audiogram records will be retained in the employee's medical records as per Resolution Consultants' Medical Surveillance Procedure for a period as directed by regulation or Resolution Consultants' Medical Provider.

5.1.3 Employee training session documentation will be retained for the duration of employment.

6.0 Attachments

6.1 5-510-Specific Hearing Conservation Program

6.2 5-510-Hearing Protection Guidelines

5-510-Hearing Protection Guidelines

1.0 Comparison

Comparison of Hearing Protection	
Ear Plugs	Ear Muffs
<p>Advantages:</p> <ul style="list-style-type: none"> • small and easily carried • convenient to use with other personal protection equipment (can be worn with ear muffs) • more comfortable for long-term wear in hot, humid work areas • convenient for use in confined work areas 	<p>Advantages:</p> <ul style="list-style-type: none"> • less attenuation variability among users • designed so that one size fits most head sizes • easily seen at a distance to assist in the monitoring of their use • not easily misplaced or lost • may be worn with minor ear infections
<p>Disadvantages:</p> <ul style="list-style-type: none"> • requires more time to fit • more difficult to insert and remove • require good hygiene practices • may irritate the ear canal • easily misplaced • more difficult to see and monitor usage 	<p>Disadvantages:</p> <ul style="list-style-type: none"> • less portable and heavier • more inconvenient for use with other personal protective equipment • more uncomfortable in hot, humid work area • more inconvenient for use in confined work areas • may interfere with the wearing of safety or prescription glasses; wearing glasses results in breaking the seal between the ear muff and the skin and results in decreased hearing protection

2.0 Care and Use

- 2.1 Follow the manufacturer's instructions.
- 2.2 Check hearing protection regularly for wear and tear.
- 2.3 Replace ear cushions or plugs that are no longer pliable.
- 2.4 Replace a unit when head bands are so stretched that they do not keep ear cushions snugly against the head.
- 2.5 Disassemble ear muffs to clean.
- 2.6 Wash ear muffs with a mild liquid detergent in warm water, and then rinse in clear warm water. Sound-attenuating material inside the ear cushions must not get wet.
- 2.7 Use a soft brush to remove skin oil and dirt that can harden ear cushions.
- 2.8 Squeeze excess moisture from the plugs or cushions and then place them on a clean surface to air dry.



5-510-Site-Specific Hearing Conservation Program

Site (Project)

1.0 Monitoring

As per regulation, noise monitoring will be conducted by the following procedure:

Such monitoring will consist of (check those that apply):

- Noise Dosimetry Sound Level Meter Survey

Specific instrumentation to be used is (make/model):

Make	Model

and will be calibrated at a frequency of and documented in the .

Monitoring strategy is as follows (list all equipment and activities on site that may involve sound pressure levels above 80 dBA and an explanation of the strategy to document actual exposures):

Area/Equipment	Monitoring Strategy

Where areas or equipment are not clearly identified, all monitoring will be documented utilizing an illustrated layout (attach form developed for the specific site). Monitoring frequency will be in accordance with the strategy outlined above and when the following changes in site conditions/activities occur:

1.
2.
3.
4.
5.



2.0 Employee Notification

All site employees exposed above the regulated action level (85 dBA – 8 hour TWA) will be notified of the monitoring results by *(insert name/title)* at an interval not to exceed after completion of monitoring.

Notification shall be written, with a copy to the SH&E Department. Documentation of employee notifications and corresponding signatures of notified employees will be kept in the site health and safety logbook/files.

3.0 Observation of Monitoring

All employees affected by the monitoring, or a designated employee representative, shall be given the opportunity to observe noise monitoring procedures. This will be achieved by:

4.0 Audiometric Testing Program and Requirements

Resolution Consultants personnel who perform field activities where noise exposure above action levels is expected are required to participate in an audiometric testing program. Additionally, any subcontractors performing work on Resolution Consultants projects where noise levels exceeding action level will be required to provide documentation that they participate in an audiometric testing program that meets the applicable regulations. Documentation of participation in the testing program will be maintained by and will be located at .

5.0 Hearing Protectors and Estimating Attenuation

A selection of suitable hearing protectors will be made available to all employees who are expected to have 8-hour TWA noise exposures above 85 dBA. The types anticipated to be available include:

Protection Type	Attenuation

Hearing protector attenuation will be evaluated by for specific noise environments according to the following method prior to determining their suitability for use:

1.
2.
3.

The following site personnel will be required to wear hearing protectors during specific activities and the results of site-specific monitoring conducted in accordance with this procedure. *(This section can be completed after monitoring, if necessary).*



Employee Name	Activity Type	Type of Protection

Hearing protectors will be properly fitted by _____ upon initial distribution to site workers.

Training in the use and care of hearing protectors shall be conducted by _____ during the initial site-specific health and safety training. Training contents shall meet the requirements set forth in this procedure and the applicable regulations.

Hearing protectors will be distributed by _____ from the storage location at the _____.

6.0 Access to Information and Training Materials

All information required by regulation to be made available to the employees will be posted by (*insert name/title*) _____ at the _____.

Local Occupational Health and Safety Regulations will also be kept on site.

7.0 Recordkeeping

Records required by Resolution Consultants' Hearing Conservation Program and Regulations shall be completed by _____ and shall be maintained at the _____ and placed on permanent file at the _____ for the minimum duration required by the standard. Employees can access their individual records by contacting _____.

All records required by this section will be transferred to any employee's successive employer if Resolution Consultants ceases to do business.

8.0 Approvals

Project Manager: _____ Date: _____

SH&E Representative: _____ Date: _____

5-511 Heat Stress Prevention

1.0 Purpose and Scope

- 1.1 Establishes a heat stress prevention program to help ensure that employees know and recognize the symptoms of heat stress-related illnesses and are prepared to take appropriate corrective action.
- 1.2 This procedure applies to all Resolution Consultants employees and operations.

2.0 Terms and Definitions

- 2.1 **Acclimated:** Workers who have developed physiological adaptation to hot environments characterized by increased sweating efficiency, circulation stability, and tolerance of high temperatures without stress. Acclimatization occurs after 7 to 10 consecutive days of exposure to heat and much of its benefit may be lost if exposure to hot environments is discontinued for a week.
- 2.2 **Chemical Protective Clothing (CPC):** Apparel that is constructed of relatively impermeable materials intended to act as a barrier to physical contact of the worker with potentially hazardous materials in the workplace. Such materials include: Tyvek® coveralls (all types) and polyvinyl chloride (PVC) coveralls and rain suits.
- 2.3 **Unacclimated:** Workers who have not been exposed to hot work conditions for one week or more or who have become heat-intolerant due to illness or other reasons.
- 2.4 **Heat Cramps:** A form of heat stress brought on by profuse sweating and the resultant loss of salt from the body.
- 2.5 **Heat Exhaustion:** A form of heat stress brought about by the pooling of blood in the vessels of the skin and in the extremities.
- 2.6 **Heat Rash:** A heat-induced condition characterized by a red, bumpy rash with severe itching.
- 2.7 **Heat Stress.** The combination of environmental and physical work factors that constitute the total heat load imposed on the body.
- 2.8 **Heat Stroke:** The most serious form of heat stress, which involves a profound disturbance of the body's heat-regulating mechanism.
- 2.9 **Sunburn:** Is caused by unprotected exposure to ultraviolet light that is damaging to the skin. The injury is characterized by red painful skin, blisters, and/or peeling.

3.0 References

- 3.1 5-003-SH&E Training
- 3.2 5-208-Personal Protective Equipment
- 3.3 5-314-Working Alone and Remote Travel

4.0 Procedures

4.1 Restrictions

- 4.1.1 Staff working in extreme heat or sun for extended periods of time away from a shelter or vehicle must not work alone.
- 4.1.2 Staff shall not be exposed to levels that exceed those listed in the screening criteria for heat stress exposure in the heat stress and strain section of the ACGIH Standard.
- 4.1.3 Clothing corrections shall be applied in accordance with the heat stress and strain section of the ACGIH Standard.

4.2 Roles and Responsibilities

- 4.2.1 Project Managers/field task managers' responsibilities:

- Evaluate the need for heat stress prevention measures and incorporate as appropriate into the Health and Safety Plan.
 - Implement heat stress prevention measures, as applicable, at each work site.
 - Develop/coordinate a work-rest schedule, as applicable.
 - Ensure heat stress hazard assessments/evaluations were completed for the planned activities.
 - Assign personnel physically capable of performing the assigned tasks.
 - Ensure that personnel are properly trained in the recognition of heat stress-related symptoms.
- 4.2.2 SH&E Managers' responsibilities:
- Provide heat stress awareness training.
 - Assist project teams develop appropriate work-rest schedules.
 - Conduct/support incident investigations related to potential heat stress-related illnesses.
- 4.2.3 Site Supervisors' responsibilities:
- Identify those tasks that may be most impacted by heat stress and communicate the hazard to the assigned employees.
 - Ensure that employees have been trained on the recognition of heat stress-related illness.
 - Ensure that adequate supplies of appropriate fluids are readily available to employees.
 - Ensure that a proper rest area is available.
 - Conduct heat stress monitoring, as applicable.
 - Implement the work-rest schedule.
 - Ensure that first aid measures are implemented once heat stress symptoms are identified.
 - Ensure personnel are physically capable of performing the assigned tasks and are not in a physically compromised condition.
 - Report all suspected heat stress-related illnesses.
- 4.2.4 Employees' responsibilities:
- Observe each other for the early symptoms of heat stress-related illnesses.
 - Maintain an adequate intake of available fluids.
 - Be familiar with heat stress hazards, predisposing factors, and preventative measures.
 - Report to work in a properly vested and hydrated condition.
 - Report all suspected heat stress-related illnesses.
- 4.3 **Controls**
- 4.3.1 If staff are or may be exposed, the supervisor shall:
- Conduct a heat stress assessment to determine the potential for hazardous exposure of workers, and
 - Develop and implement a heat stress exposure control plan.
- 4.3.2 If staff are or may be exposed, the supervisor shall implement engineering controls (e.g., shelters, cooling devices, etc.) to reduce the exposure of staff to levels below those listed in the screening criteria for heat stress exposure in the heat stress and strain section of the ACGIH Standard.
- 4.3.3 If engineering controls are not practicable, the supervisor shall reduce the exposure of workers to levels below those listed in the screening criteria for heat stress exposure in the heat stress and strain section of the ACGIH Standard by providing administrative controls, including a work-rest cycle or personal protective equipment, if the equipment provides protection equally effective as administrative controls.
- 4.3.4 If staff are or may be exposed, the supervisor shall provide and maintain an adequate supply of cool, potable water close to the work area for the use of a heat exposed worker.
- 4.3.5 If a staff person shows signs or reports symptoms of heat stress or strain, they shall be removed from the hot environment and treated by an appropriate first aid attendant, if available, or by a physician.

- 4.3.6 Heat stress can be a significant field site hazard, especially for workers wearing CPC. The workforce will gradually work up to a full workload under potentially stressful conditions to allow for proper acclimation.
- 4.3.7 Site personnel shall be instructed in the recognition of heat stress symptoms, the first aid treatment procedures for severe heat stress, and the prevention of heat stress injuries. Workers must be encouraged to immediately report any heat stress that they may experience or observe in fellow workers. Supervisors must use such information to adjust the work-rest schedule to accommodate such problems.
- 4.3.8 Wherever possible, a designated break area should be established in an air conditioned space, or in shaded areas where air conditioning is impractical. The break area should be equipped to allow workers to loosen or remove protective clothing, and sufficient seating should be available for all personnel. During breaks, workers must be encouraged to drink plenty of water or other liquids, even if not thirsty, to replace lost fluids and to help cool off. Cool water should be available at all times in the break area, and in the work area itself unless hygiene/chemical exposure issues prevent it.
- 4.4 **Symptoms and Treatment**
- 4.4.1 Workers who exhibit ANY signs of significant heat stress (e.g., profuse sweating, confusion and irritability, pale, clammy skin), shall be relieved of all duties at once, made to rest in a cool location, and provided with large amounts of cool water.
- 4.4.2 Anyone exhibiting symptoms of heat stroke (red, dry skin, or unconsciousness) must be taken immediately to the nearest medical facility, taking steps to cool the person during transportation (clothing removal, wet the skin, air conditioning, etc.).
- 4.4.3 Severe heat stress (heat stroke) is a life-threatening condition that must be treated by a competent medical authority.
- 4.5 **Prevention**
- 4.5.1 All staff working in extreme heat or sun should understand the following guidelines for preventing and detecting heat exhaustion and heat stroke.
- If you experience heat exhaustion or heat stroke you must immediately seek shelter and water.
 - Take frequent short breaks in areas sheltered from direct sunlight; eat and drink small amounts frequently.
 - Try to schedule work for the coolest part of the day, early morning and evening.
- 4.5.2 Prevention of heat-related illnesses:
- Avoid strenuous physical activity outdoors during the hottest part of the day.
 - Wear a hat and light-colored, loose-fitting clothing to reflect the sun.
 - Avoid sudden changes of temperature. Air out a hot vehicle before getting into it.
 - If you take diuretics, ask your doctor about taking a lower dose during hot weather.
 - Drink 8 to 10 glasses of water per day. Drink even more if you are working or exercising in hot weather.
 - Avoid caffeine and alcohol as they increase dehydration.
 - If you exercise strenuously in hot weather, drink more liquid than your thirst seems to require.
- 4.6 **Personal Protective Equipment**
- Wear a hat and light-colored, loose-fitting clothing to reflect the sun.
 - Apply sunscreen to exposed skin (SPF 30 or greater, follow directions on label).
 - Wear sunglasses with UV protection.
 - Pack extra water to avoid dehydration (try freezing water in bottles overnight to help keep the water cooler for longer during the day).
- 4.7 **Work-Rest Schedule Practices**
- Intake of fluid will be increased beyond that which satisfies thirst, and it is important to avoid "fluid debt," which will not be made up as long as the individual is sweating.
 - Two 8-ounce glasses of water should be taken prior to beginning work, then up to 32 oz. per hour during the work shift; fluid replacement at frequent intervals is most effective.

- The best fluid to drink is water; liquids like coffee or soda do not provide efficient hydration and may increase loss of water.
- If commercial electrolyte drinks (e.g., Gatorade) are used, the drink should be diluted with water, or 8 ounces of water should be taken with each 8 ounces of electrolyte beverage.
- Additional salt is usually not needed and salt tablets should not be taken.
- Replacement fluids should be cool, but not cold.
- Breaks will be taken in a cool, shaded location, and any impermeable clothing should be opened or removed.
- Dry clothing or towels will be available to minimize chills when taking breaks.
- Manual labor will not be performed during breaks, other than paperwork or similar light tasks.
- Other controls that may be used include:
 - Scheduling work at night or during the cooler parts of the day (6 am–10 am, 3 pm–7 pm).
 - Erecting a cover or partition to shade the work area.
 - Wearing cooling devices such as vortex tubes or cooling vests beneath protective garments. If cooling devices are worn, only physiological monitoring will be used to determine work activity.

4.8 **Evaluating the Work-Rest Schedule's Effectiveness**

4.8.1 Once a work-rest schedule is established, the work supervisor must continually evaluate its effectiveness through observation of workers for signs/symptoms of heat stress. Measurement of each worker's vitals (e.g., pulse, blood pressure, and temperature) can provide additional information in determining if the schedule is adequate, and is accomplished as follows:

4.8.2 At the start of the workday each worker's baseline pulse rate (in beats per minute – bpm) is determined by taking a pulse count for 15 seconds and multiplying the result by four or an automated pulse count device may be utilized. Worker pulse rates can then be measured at the beginning and end of each break period to determine if the rest period allows adequate cooling by applying the following criteria:

- Each worker's maximum heart rate at the start of any break should be less than [180 minus worker's age] bpm. If this value is exceeded for any worker, the duration of the following work period will be decreased by at least 10 minutes.
- At the end of each work period all workers' heart rates must have returned to within +10% of the baseline pulse rate. If any worker's pulse rate exceeds this value the break period will be extended for at least 5 minutes, at the end of which pulse rates will be remeasured and the end-of-break criteria again applied.

4.8.3 Use a clinical thermometer or similar device to measure the oral/ear temperature at the beginning (before drinking liquids) and end of each break period and apply the following criteria:

- If the oral temperature exceeds 99.6°F, shorten the next work cycle by one-third without changing the rest period.
- If the oral temperature still exceeds 99.6°F (36.6°C) at the beginning of the next rest period, shorten the following work cycle by one-third.

4.8.4 Use of an automated or similar blood pressure device will be used to assess each employee's blood pressure at the beginning and end of each break period to determine if the rest period allows adequate cooling by applying the following criteria:

- If the blood pressure of an employee is outside of 90/60 to 150/90, then the employee will not be allowed to begin or resume work; extend the break period by at least five minutes, at the end of which blood pressure rates will be remeasured and the end-of-break criteria again applied.

4.8.5 All physiological monitoring of heat stress will be documented using *5-511-Heat/Cold Stress Monitoring Log*.

4.9 **Training**

4.9.1 Project staff and their supervisors that may be exposed to the hazard will be oriented to the hazard and the controls prior to work commencing.

4.9.2 Those personnel potentially exposed to heat stress will receive training including, but not limited to

- Sources of heat stress, influence of protective clothing, and importance of acclimatization.
- How the body handles heat.
- Recognition of heat-related illness symptoms.
- Preventative/corrective measures.
 - Employees will be informed of the harmful effects of excessive alcohol consumption in the prevention of heat stress.
 - All employees will be informed of the importance of adequate rest and proper diet in the prevention of heat stress.
- First aid procedures for heat stress-related illnesses.

5.0 Records

None.

6.0 Attachments

6.1 5-511-FM Heat/Cold Stress Monitoring Log

5-511 Form 1 Heat Stress Monitoring Log

The purpose of this form is to track entry into hot zones wearing chemically protective clothing and monitor employees for heat stress-related illness. It is the responsibility of the foreman or supervisor-in-charge to ensure that each person entering the hot zone completes the required information. Vital signs must be taken by a competent person.

Project Name:			Foreman/Supervisor:					Work/Rest Schedule1:				IN (min)	OUT (min)			
Date:	Water Provided ²		Acclimated ³		Initial Vitals ³	Vital Signs and Time In/Out ⁴										
	Yes	No	Yes	No	Vitals	In	Out	Vitals	In	Out	Vitals	In	Out	Vitals	In	Out
Employee Name					P			P			P			P		
					BP			BP			BP			BP		
					Temp			Temp			Temp			Temp		
					P			P			P			P		
					BP			BP			BP			BP		
					Temp			Temp			Temp			Temp		
					P			P			P			P		
					BP			BP			BP			BP		
					Temp			Temp			Temp			Temp		
					P			P			P			P		
					BP			BP			BP			BP		
					Temp			Temp			Temp			Temp		
					P			P			P			P		
					BP			BP			BP			BP		
					Temp			Temp			Temp			Temp		

1. Please refer to 5-511 Heat Stress. Section 6.3 provides specific details on how to develop a work-rest schedule.
2. Each employee should be provided a sufficient amount of water or sports drink before entering the hot zone. Drinks such as coffee and cola should be discouraged.
3. A worker is "acclimated" if he/she has worked in a hot environment for at least 7 to 10 consecutive days. If a worker is acclimated, check "Yes." If a worker is not acclimated, check "No" and reduce the "Min In" by 50 percent for that employee until the 7- to 10-day period is reached.
4. "Vitals" refers to employee vital signs (e.g., pulse [P], blood pressure [BP], body temperature [Temp], etc.). Initial vitals must be taken and recorded before the start of work operations in the hot zone. Each time the employee exits the hot zone, vitals must be taken and evaluated for heat stress criteria. Section 6.4 of 5-511 Heat Stress provides specific instructions for taking and evaluating employee vital signs.
5. Body temperature vital signs will be recorded in °F.

5-514-MEC/UXO Response Procedures for Non-MEC Operations

1.0 Introduction

- 1.1 The potential presence of MEC/UXO at a site presents hazards to personnel performing site assessment operations both on the ground surface while conducting surface operations and in the subsurface while conducting intrusive operations, such as excavating, trenching, soil boring or drilling. For all sites where it has been determined that there is a low probability of encountering MEC/UXO, the following Response Procedures should be followed.
- 1.2 The basic policy to be observed regarding MEC/UXO is:
- 1.3 *DO NOT TOUCH IT.* Follow the 3Rs: RECOGNIZE, RETREAT AND REPORT. In addition, use the following information to minimize the hazards to personnel from MEC/UXO.
- 1.4 All personnel must be briefed concerning the potential MEC/UXO hazards in surface areas when a low probability of encountering MEC/UXO exists at a site.

2.0 MEC/UXO in Surface Areas

- 2.1 During field activities, MEC/UXO items may be present on the ground surface and present a potential hazard to employees. When moving about the site personnel should remain alert for any MEC/UXO items which might be present. Each work site should be thoroughly checked for the presence of MEC/UXO before any other activities commence.
- 2.2 In the event that any MEC/UXO item is observed or expected, the following will requirements will be observed:
 - 2.2.1 Personnel should mark the location of the MEC/UXO item with highly visible marking tape and alert all other personnel in the area to its presence. If possible, use GPS to record the waypoint of the suspect item.
 - 2.2.2 Any non-MEC Resolution Consultants work operations occurring in the area will cease and all Resolution Consultants and subcontractor employees will evacuate the area.
 - 2.2.3 Under no circumstances will any Resolution Consultants or subcontractor employee attempt to move or otherwise handle any MEC/UXO or suspected MEC/UXO item. COLLECTION OF "SOUVENIRS" IS PROHIBITED.
 - 2.2.4 The client representative will be immediately informed about the MEC/UXO discovery and provided the location of the suspected item.

3.0 Excavating and Trenching Activities

Excavation activities may expose subsurface MEC/UXO items. Throughout the excavation work a member of the site team will be posted as an observer, with the responsibility to monitor the trench conditions and observe if any suspected MEC/UXO items may be present. In the event that any MEC/UXO item is encountered during excavation, the following procedures will be observed.

- 3.1 **MEC/UXO Item Observed in the Trench**
 - 3.1.1 The work operation will cease **immediately**. Personnel will evacuate to a safe area/distance.
 - 3.1.2 The area will be delineated using yellow CAUTION tape or bright paint. No stakes or rods will be driven into the ground to support the tape.
 - 3.1.3 Responsibility for the work location will be transferred to the installation or client.

3.2 **MEC/UXO Item Observed in the Spoils**

- 3.2.1 The work operation will cease immediately and all personnel will evacuate to a safe area/distance. The equipment will be left in place.
- 3.2.2 Delineate MEC/UXO with yellow caution tape or bright paint.
- 3.2.3 All Resolution Consultants and subcontractor employees will evacuate this area.
- 3.2.4 Under no circumstances will any Resolution Consultants or subcontractor employee attempt to move or otherwise handle any MEC/UXO/suspected MEC/UXO item. COLLECTION OF "SOUVENIRS" IS PROHIBITED.
- 3.2.5 The operations manager or safety officer will be alerted as to the location of the suspected item, and responsibility for the work location will be transferred to the installation or client.

3.3 **MEC/UXO Item Encountered and Detonation Occurs**

- 3.3.1 The work operation will cease immediately. Personnel will evacuate to a safe area/distance, upwind, minimum 1,250 feet.
- 3.3.2 If injuries have occurred, the Emergency Action Plan will be activated.
- 3.3.3 Equipment will be left in place.
- 3.3.4 Responsibility for the work location will be transferred to the installation or client.
- 3.3.5 Once equipment is recovered it will be thoroughly inspected for damage before being put back into service.

4.0 **Drilling Activities**

In the event that any MEC/UXO item is encountered during drilling, the following procedures apply.

4.1 **MEC/UXO Item Believed to be Encountered Downhole but No Detonation Occurs**

- 4.1.1 The work operation will cease immediately.
- 4.1.2 If drilling, the drilling auger will be blocked in place and disconnected from the drill rig. The equipment (drill rig, backhoe, etc.) will be withdrawn from the site and the area will be delineated using yellow CAUTION tape.
- 4.1.3 Responsibility for the work location will be transferred to the installation or client.

4.2 **MEC/UXO Item Observed in the Spoils**

- 4.2.1 The work operation will cease immediately and all personnel will evacuate the area. The equipment will be left in place.
- 4.2.2 Delineate MEC/UXO with yellow caution tape or bright paint.
- 4.2.3 All Resolution Consultants and subcontractor employees will evacuate this area.
- 4.2.4 Under no circumstances will an Resolution Consultants or subcontractor employee attempt to move or otherwise handle any MEC/UXO or suspected item. COLLECTION OF "SOUVENIRS" IS PROHIBITED.
- 4.2.5 The operations manager or safety officer will be alerted as to the location of the suspected item, and responsibility for the work location will be transferred to the installation or client.

4.3 **MEC/UXO Item Encountered Downhole and Detonation Occurs**

- 4.3.1 The work operation will cease immediately.
- 4.3.2 If injuries have occurred the Emergency Action Plan will be activated. Once any necessary immediate response actions have been completed, the drilling auger will be blocked in place and disconnected from the drill rig. The drill rig will then be withdrawn from the site and the area will be delineated using yellow CAUTION tape.
- 4.3.3 Responsibility for the work location will be transferred to the installation or client.
- 4.3.4 The drill rig will be thoroughly inspected for damage before being put back into service.

5-514-Munitions and Explosives of Concern/ Unexploded Ordnance (MEC/UXO)

1.0 Purpose and Scope

- 1.1 This SOP presents procedures for obtaining Munitions and Explosives of Concern (MEC) support during the planning or performance of environmental practice-based projects such as Hazardous, Toxic, and Radioactive Waste (HTRW) investigations and remedial construction activities. MEC support activities include anomaly avoidance and surface and subsurface removal activities.
- 1.2 This SOP was developed to provide Resolution Consultants personnel guidance on the procedures and requirements involved in recognizing and mitigating the potential hazards associated with MEC and Material Potentially Presenting an Explosive Hazard (MPPEH) that may be encountered during field operations.

2.0 Terms and Definitions

- 2.1 **Anomaly:** Any item that is seen as a subsurface irregularity after geophysical investigation. This irregularity would deviate from the expected subsurface ferrous and non-ferrous material at a site (i.e., pipes, power lines, etc.).
- 2.2 **Anomaly Avoidance:** Techniques employed on property known or suspected to contain UXO, other munitions that may have experienced abnormal environments (e.g., DMM), and munitions constituents in high enough concentrations to pose an explosive hazard (regardless of configuration), in an effort to avoid contact with potential surface or subsurface explosive hazards, thus allowing entry to the area for the performance of required operations.
- 2.3 **Construction Support:** Assistance provided by UXO-qualified personnel and/or by personnel trained and qualified for operations involving MEC during intrusive construction activities on property known or suspected to contain UXO, other munitions that may have experienced abnormal environments (e.g., DMM), munitions constituents in high enough concentrations to pose an explosive hazard, regardless of configuration, to ensure the safety of personnel or resources from any potential explosive hazards.
- 2.4 **Discarded Military Munitions (DMM):** Military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include unexploded ordnance, military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of consistent with applicable environmental laws and regulations (10 U.S.C. 2710(e)(2)).
- 2.5 **Exclusion Zone:** Safety zone established around the MEC work area. Only essential project personnel and authorized escorted visitors are allowed within the exclusion zone. Those authorized to be in the exclusion zone are primarily the personnel performing the MEC removal tasks and those overseeing such personnel. Examples of exclusion zones are safety zones around MEC intrusive activities and safety zones where MEC is intentionally detonated.
- 2.6 **Explosive Hazard:** A condition where danger exists because explosives are present that may react (e.g., detonate, deflagrate) in a mishap with potential unacceptable effects (e.g., death, injury, damage) to people, property, operational capability, or the environment.
- 2.7 **Explosives or Munitions Emergency Response:** All immediate response activities to control, mitigate, or eliminate the actual or potential threat encountered during an explosives or munitions emergency. An explosives or munitions emergency response may include in-place render-safe procedures, treatment or destruction of the explosives or munitions, and/or transporting those items to another location to be rendered safe, treated, or destroyed. Explosives and munitions emergency responses can occur on either public or private lands and are not limited to responses at RCRA facilities (Military Munitions Rule, 40 CFR 260.10).

- 2.8 **Geophysical Techniques:** Techniques utilized for the detection and measurement of buried anomalies (e.g., ferromagnetic indicators and ground penetrating radar) to investigate the presence of munitions.
- 2.9 **Hazardous, Toxic, and Radioactive Waste (HTRW) Activities:** HTRW activities include those activities undertaken for the Environmental Protection Agency's Superfund program, the Defense Environmental Restoration Program (DERP), including Formerly Used Defense Sites (FUDS), and Installation Restoration Program (IRP) sites at active DoD facilities, HTRW actions associated with Civil Works projects, and any other mission or non-mission work performed for others at HTRW sites.
- 2.10 **Material Documented as Safe (MDAS):** MPPEH that has been assessed and documented as not presenting an explosive hazard and for which the chain of custody has been established and maintained. This material is no longer considered to be MPPEH.
- 2.11 **Material Documented as an Explosive Hazard (MDEH):** MPPEH that cannot be documented as MDAS, for which the maximum explosive hazards the material is known or suspected to present has been assessed and documented, and for which the chain of custody has been established and maintained. This material is no longer considered to be MPPEH. (The MDEH characterization only addresses the explosives safety status of the material.)
- 2.12 **Material Potentially Presenting an Explosive Hazard (MPPEH):** MPPEH is material potentially containing explosives or munitions (e.g., munitions containers and packaging material; munitions debris remaining after munitions use, demilitarization, or disposal; and range-related debris), or material potentially containing a high enough concentration of explosives such that the material presents an explosive hazard (e.g., equipment, drainage systems, holding tanks, piping, or ventilation ducts that were associated with munitions production, demilitarization or disposal operations).
- 2.13 **Military Munitions:** Ammunition products and components produced for or used by the armed forces for national defense and security. The term includes confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, riot control agents, smokes, incendiaries, including bulk explosives, and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components thereof.
- 2.14 **Minimum Separation Distance (MSD):** MSD is the distance at which personnel in the open (unprotected) shall be from an intentional or unintentional detonation based on the Munition with the Greatest Fragmentation Distance (MGFD).
- 2.15 **Munition with the Greatest Fragmentation Distance (MGFD):** The munition with the greatest fragment distance that is reasonably expected (based on research or characterization) to be encountered in any particular area.
- 2.16 **Munitions and Explosives of Concern (MEC):** This term, which distinguishes specific categories of military munitions that may pose unique explosives safety risks, means: (a) Unexploded ordnance (UXO), as defined in 10 U.S.C. 101(e)(5); (b) discarded military munitions (DMM), as defined in 10 U.S.C. 2710(e)(2); or (c) munitions constituents (e.g., TNT, RDX), as defined in 10 U.S.C. 2710(e)(3), present in high enough concentrations to pose an explosive hazard.
- 2.17 **Munitions Response:** Response actions, including investigation, surface and subsurface removal actions and remedial actions to address the explosives safety, human health, or environmental risks presented by unexploded ordnance (UXO), discarded military munitions (DMM), or munitions constituents (MC), or to support a determination that no removal or remedial action is required.
- 2.18 **Munitions Response Area (MRA):** An area, located on a defense site, that is known or suspected to contain UXO, DMM, or MC. Examples include former ranges and munitions burial areas. A munitions response area may be comprised of one or more munitions response sites.
- 2.19 **Munitions Response Site (MRS):** A discrete location within an MRA that is known to require a munitions response.
- 2.20 **Unexploded Ordnance (UXO):** Military munitions that (a) have been primed, fuzed, armed, or otherwise prepared for action; (b) have been fired, dropped, launched, projected, or placed in such a

manner as to constitute a hazard to operations, installations, personnel, or material; and (c) remain unexploded either by malfunction, design, or any other cause (10 U.S.C. 101(e)(5)(A) through (C)).

- 2.21 **UXO Qualified Personnel:** Personnel who have performed successfully in military EOD positions or are qualified to perform in the following Department of Labor, Service Contract Act, or Directory of Occupations contractor positions: UXO Technician II, UXO Technician III, UXO Safety Officer, UXO Quality Control Specialist or Senior UXO Supervisor (DDESB TP-18).

3.0 References

- 3.1 Applicable sections and paragraphs in the documents listed below are primarily used as references for the planning and execution of UXO operations:
- 3.1.1 OSHA General Industry Standards, 29 CFR 1910;
 - 3.1.2 OSHA Construction Standards, 29 CFR 1926;
 - 3.1.3 USACE EM 385-1-1, Safety and Health Requirements Manual;
 - 3.1.4 DoD 4160.21-M, Defense Reutilization and Marketing Manual;
 - 3.1.5 Applicable sections of 49 CFR Parts 100 to 199.
 - 3.1.6 DoD 6055.9-STD, DOD Ammunition and Explosives Safety Standards;
 - 3.1.7 DA PAM 385-64, Ammunition and Explosives Safety Standards;
 - 3.1.8 TM 9-1300-200, Ammunition General;
 - 3.1.9 TM 9-1300-214, Military Explosives;
 - 3.1.10 USACE EP 385-1a, Basic Safety Concepts and Considerations for Ordnance and Explosives Operations;
 - 3.1.11 USACE EP 75-1-2, MEC Support During HTRW and Construction Activities;
 - 3.1.12 USACE EM 385-1-97, Explosives Safety and Health Manual;
 - 3.1.13 USACE EM 1110-1-4009, Military Response Actions; and
 - 3.1.14 DDESB TP 18, Minimum Qualifications for UXO Technicians and Personnel

4.0 Procedure

- 4.1 EC hazards are generally encountered on land surfaces, subsurface, and within bodies of water formerly occupied and/or used by the Department of Defense (DoD). Despite efforts to remove and cleanup potential MEC hazards prior to releasing the land from DoD control, some MEC items may remain.
- 4.2 Even though evidence of MEC is not observable on the ground surface at a site, MEC hazards may be present on former DoD property.
- 4.3 MEC hazards may be present underground from remaining impacted items or may have been pushed into depressions and covered with dirt, water, or intentionally buried in pits.
- 4.4 **General Requirements**
- 4.4.1 Prior to beginning any activities on a site suspected of former DoD munitions use, every effort shall be made to determine whether munitions-related activities ever occurred on the specific work area or within waters on which Resolution Consultants operations/activities will take place. Normally the client, based on available historical documents or prior environmental response actions, will make an assessment determination for encountering MEC. This determination should be documented and provided to the Resolution Consultants project managers and used to plan the appropriate level of MEC/UXO support required (e.g., no support, standby or on-call support, or a removal action within the work site footprint).
 - 4.4.2 All Munitions and Explosives of Concern (MEC) or Material Presenting a Potential Explosive Hazard (MPPEH) encountered on Resolution Consultants jobsites shall be treated as extremely dangerous and shall be reported immediately. MEC or MPPEH, regardless of age or condition, shall be handled by UXO-qualified personnel only as defined by DDESB TP 18.

- 4.4.3 Resolution Consultants has established an Military Munitions Response Group at the 4840 Cox Road Glen Allen, Virginia, office. This group is staffed with UXO-qualified personnel and serves as the company's technical center of expertise for work activities involving the detection, evaluation, handling, and remediation of MEC. For Resolution Consultants activities where the known or suspected presence of MEC may impact work activities (non-MEC procedures), the MEC Group will provide technical support, including worker familiarization training and on-site support as needed.
- 4.4.4 On sites that have not been identified as having MEC or explosives contamination where Resolution Consultants personnel have been contracted to perform environmental practice-based tasks, the following actions should be taken if suspect items are encountered.
- 4.5 **Response Actions**
- 4.5.1 If MEC or MPPEH is encountered or suspected to have been encountered, *DO NOT TOUCH IT*. Follow the 3Rs: RECOGNIZE, RETREAT, AND REPORT.
- 4.5.2 Identify the location, notify other team members, keep all unnecessary personnel out of the area and report the finding to your supervisor. The site is now considered a potential munitions response site (MRS). *Note: The general location of the MEC hazard should be marked with tape, colored cloth, or colored ribbon. If available, attach the marker to a branch, structure, or other existing object so that it is about 3 ft (.9 m) off the ground and visible from all approaches. Place the marker no closer than the point where you first recognized the MEC hazard, and do not drive stakes into the ground or otherwise disturb the surface. If possible, use GPS to record the waypoint of the suspect item.*
- 4.5.3 Any time suspected MEC is encountered while working on a non-DoD installation, immediately call the local emergency response authority (e.g., local police, sheriff, or 911) to report the finding.
- 4.5.4 If encountered on an active DoD installation, immediately notify your supervisor, Government Designated Authority (GDA), and installation Point of Contact (POC), who will contact and facilitate military EOD response.
- 4.5.5 Ensure that the Resolution Consultants SH&E Department is notified of the presence of known or suspected MEC or MPPEH items on any work site prior to initiating field activities. This type of finding represents a potential change in scope, and the appropriate hazard analysis shall be completed prior to beginning any operations involving the MEC or MPPEH. An outline of Response Procedures for non-MEC operations is included as an attachment to this document.
- 4.6 **Probability Assessment**
- 4.6.1 If the site has a minimal probability of encountering MEC (e.g., current or previous land use leads to an initial determination that MEC or MPPEH is not present), no UXO support is required.
- 4.6.2 If the site has a low probability of encountering MEC (e.g., current or previous land use leads to an initial determination that MEC or MPPEH *may* potentially be present), only MEC standby support will be required.
- 4.6.3 If the probability of encountering MEC is moderate to high (e.g., current or previous land use leads to a determination that MEC was employed or disposed of within the work site or area of concern), UXO-qualified personnel shall conduct a surface clearance/removal for all areas within the proposed limits of disturbance for the planned site activities and subsurface clearance/removal any areas where intrusive type activities are to occur (i.e., sampling locations, well installation, construction footprint and access routes).
- 4.6.4 If MEC or MPPEH is discovered at any point in time by site personnel, the response actions in Section 4.2 should be followed (RECOGNIZE, RETREAT, REPORT) and the probability assessment will be re-evaluated.
- 4.7 **Resolution Consultants MEC/UXO Avoidance Support**
- 4.7.1 During the investigative/design phase of any project on a site known or suspected to contain MEC, a probability assessment will be conducted and provisions for MEC support (if necessary) will be included in the project planning phase. For sites requiring investigation activities other than the identification and removal of MEC/UXO, MEC support refers to MEC/UXO or anomaly avoidance techniques implemented to avoid any potential encounter with surface and/or subsurface MEC items or anomalies. Intrusive activities for anomaly investigations are not authorized during anomaly avoidance activities. The appropriate level of support for these sites will be determined on a case-by-case basis by the project delivery team (PDT).

4.7.2 During MEC/UXO or anomaly avoidance activities, Resolution Consultants will provide a UXO team consisting of a minimum of two personnel, one of whom shall be a UXO Technician III. This individual will be the UXO team leader. The UXO team shall be on site during all sampling activities. The UXO team may include additional UXO-qualified personnel, geophysicists, or any other team member, depending on site- and task-specific conditions/requirements.

4.8 **Standby Support**

4.8.1 If the probability of encountering MEC is low (e.g., current or previous land use leads to an initial determination that MEC may be present), only MEC standby support will be required.

4.8.2 The UXO team will meet with on-site management and construction personnel and conduct a general work and safety briefing, including:

- Probable site hazards and site-specific safety considerations.
- MEC standby support procedures.
- Responsibilities and lines of authority for any MEC response.
- Emergency response procedures.

4.8.3 The UXO team will physically preview the actual construction footprint with the onsite management of the construction team and discuss visual observations and potential areas of concern. In the event that surface MEC is discovered, the UXO team will place flagging adjacent to the discovery for subsequent visual reference, select a course around the item, and lead any on-site personnel out of the area. The UXO team will assess the condition of the MEC to determine if a disposal action is required.

4.8.4 When MEC is found on the surface, the PDT will perform a detailed assessment of the site to determine if the potential for encountering MEC is still low. If the potential for encountering MEC is raised to moderate to high, a subsurface removal for the construction footprint will be required.

4.9 **Anomaly Avoidance**

4.9.1 This paragraph discusses anomaly avoidance procedures during the investigative/design phase of any project on a site with known or suspected MEC on HTRW sites. Procedures are implemented to include, but are not limited to, surveying and mapping, environmental and natural resource assessments, surface and subsurface sampling, boring and drilling, and groundwater monitoring.

4.9.2 The purpose of anomaly avoidance is to avoid any potential surface MEC and MPPEH and subsurface anomalies during sampling activities. *Intrusive anomaly investigation is not authorized during anomaly avoidance operations.*

4.9.3 The Resolution Consultants Military Munitions Response Group will prepare a Work Plan detailing MEC procedures to supplement the HTRW Work Plan/Site Plan and provide additional safety precautions specific to the tasks to be performed to be included in the safety documents.

4.9.4 The UXO team members have the following responsibilities for anomaly avoidance procedures during an HTRW investigation project on a site with known or suspected MEC:

- Provide the MEC recognition, location, and safety functions for the HTRW personnel during HTRW field activities;
- Conduct MEC safety briefings for all site personnel and visitors.

- 4.9.5 The senior UXO qualified person has final on-site authority on MEC procedures and explosive safety issues.
- 4.10 **Access Surveys**
- 4.10.1 HTRW sampling personnel shall be escorted by UXO-qualified personnel at all times in areas potentially containing MEC until the UXO team has completed the access surveys and the cleared areas have been marked. Escorted HTRW personnel will follow behind the UXO escort. If anomalies or MEC are detected, the UXO escort will halt escorted personnel in place, select a course around the item, and instruct personnel to follow.
- 4.10.2 The UXO team shall conduct a surface access survey and a subsurface survey for anomalies before any type of activities commence, including foot and vehicular traffic. Typically, the access route will be at least twice as wide as the widest vehicle that will use the route.
- 4.10.3 The UXO team shall also complete an access survey of an area around the proposed investigation site that is large enough to support all planned operations. The size of the surveyed area will be site-specific and will take into account, for example, maneuverability of required equipment (e.g., drill rigs, excavation equipment), parking of support vehicles, and establishment of decontamination stations. As a minimum, the surveyed area will have a dimension in all directions equal to twice the length of the longest vehicle or piece of equipment to be brought on site.
- 4.10.4 Geophysical instrumentation capable of detecting the smallest known or anticipated military munition will be used to locate anomalies just below the surface that may be encountered through erosion from rain or continual vehicular traffic.
- 4.10.5 If anomalies or surface MEC are encountered, they will be marked with flagging and the investigation area will be relocated to avoid contact. The UXO team will clearly mark the boundaries of the surveyed area using survey flagging and pin flags. The UXO team will establish a system of flagging colors that will distinguish anomalies, surface MEC, and route boundaries from each other as well as from any utility markings that have been used at the site.
- 4.10.6 If surface MEC is encountered, the UXO team will assess the condition of the MEC to determine if a disposal action is required. No personnel will be allowed outside the surveyed areas.
- 4.11 **Subsurface Geophysical Survey**
- 4.11.1 The UXO team shall complete a subsurface geophysical survey of the subsurface sampling locations or well installation. If an anomaly is detected, HTRW sampling personnel shall select a new sampling location. Any anomalies detected will be prominently marked with survey flagging or pin flags for avoidance.
- 4.11.2 If the subsurface sampling or well installation depth is greater than the geophysical instrument's detection capabilities, the UXO team shall incrementally complete the geophysical survey as outlined below.
- 4.11.3 Once an access survey has been completed, the UXO team will install a pilot hole at each proposed drill hole location, using a hand auger. While the UXO team is completing the geophysical survey, the remaining project personnel shall withdraw out of the immediate area to a distance determined by the senior UXO personnel. If an anomaly is detected, the pilot hole will be backfilled in accordance with site-specific procedures and HTRW sampling personnel shall select a new drill hole location. As long as no anomalies are detected, the pilot hole will be advanced to the maximum reach of the auger or to the maximum depth of the proposed drill hole, whichever is less.
- 4.11.4 During the excavation of the pilot hole, the auger will be withdrawn and the hole checked for anomalies every 12 inches. The pilot hole will also be inspected upon reaching the final depth, providing a total clearance depth equal to the pilot hole depth plus 12 inches.
- 4.11.5 In cases where the pilot hole does not reach the full depth of the proposed boring (e.g., the proposed depth of the drill hole is more than the maximum depth of the auger, or the UXO team cannot penetrate the soils using the auger), the drill rig may be brought on-site and advanced in 12-inch increments beyond the clearance depth of the pilot hole. At the end of each 12-inch increment, the drill rig's auger shall be withdrawn from the hole so that the UXO team may screen for anomalies as described above. As necessary with loose soils, a polyvinyl chloride (PVC) pipe (minimum 3 inches inner diameter) will be inserted to keep the hole open and to allow for incremental geophysical screening.

- 4.11.6 When working in ordnance impact areas, the UXO team may discontinue incremental screening once the drilling has extended to depths of 30 feet below ground surface, the depth of penetration of the MEC has been exceeded, or the planned depth of drilling has been reached.
- 4.11.7 For all other areas, incremental screening will be determined based on an assessment of the site's characteristics and history.
- 4.12 **Recovered Chemical Warfare Materials (RCWM)**
- 4.12.1 Any time that RCWM or munitions with unknown fillers are encountered during MEC support, all work will immediately cease. 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 will position themselves as far upwind as possible while still maintaining the security of the area.
- 4.13 **Notification**
- 4.13.1 When RCWM or munitions with unknown fillers are identified on formerly used defense site (FUDS) project sites, the UXO team will notify the local POC designated in the Work Plan. The local POC will facilitate the military EOD unit's response, and two Resolution Consultants personnel will secure the site until the EOD unit's arrival. If the local POC designated in the Work Plan is not the local law enforcement agency, the local POC will inform the local law enforcement agency of the discovery.
- 4.13.2 The EOD unit will notify the U.S. Army Technical Escort Unit (TEU) and secure the area until arrival of TEU.
- 4.13.3 On active installations, the UXO team will normally notify the Range Control Officer, the Facility Engineer, Post Headquarters, or the POC designated in the Work Plan.
- 4.14 **SH&E Department Requirements**
- 4.14.1 The **Military Munitions Response Group** and **SH&E Department** provides support to project managers in the management of the safety responsibilities associated with work locations where MEC items are known or suspected to be present. The Military Munitions Response Group and SH&E Department will:
- Review and approve site-specific MEC hazard assessment for each work site where the presence of MEC is known or suspected.
 - Review and approve the Accident Prevention Plan (APP) and Site Health and Safety Plan (SSHP) to be implemented to control the potential hazards associated with the performance of planned work activities in areas of known or suspected MEC.
 - Investigate any reported unsafe acts or conditions.
 - Ensure that the **Resolution Consultants** MEC Group is involved in all projects with a known or suspected presence of MEC.
- 4.15 **Training**
- 4.15.1 UXO Personnel Training Requirements
- **Resolution Consultants** personnel working through the Military Munitions Response Group who inspect, process, or document material as safe or hazardous will be trained in the recognition and safe handling of used and unused military munitions and specific types of MPPEH and procedures that apply to MPPEH, MDEH, and MDAS that are to be released. Personnel will meet the qualification requirements of Department of Defense Explosive Safety Board (DDESB) Technical Paper (TP) 18 and will demonstrate training and experience in the recognition and safe handling of military munitions and other MPPEH and processing of material.
 - These individuals shall be certified, in writing, as being technically qualified according to the standards provided in DoDI 4140.62, November 25, 2008, and USACE guidance on the management of MPPEH and be certified in conformance with contract requirements.
 - The UXO technicians will receive operational briefings and training on their duties and responsibilities for each task to be performed.
- 4.15.2 Non-UXO Personnel Training Requirements
- Site-specific UXO awareness training will be provided for all personnel assigned to each work site. The purpose of this training is to ensure that all personnel fully understand the procedures and methods that will be used to perform operations at the project site, their individual duties and

responsibilities, and any and all safety and environmental practices/procedures associated with operations. All personnel will be trained before they are allowed to work on site and will receive ordnance recognition and UXO safety precautions provided by the SUXOS or UXOSO. Training topics/issues and responsibilities are detailed in the site specific work/safety plans.

- All personnel will receive additional training on the specific equipment they will operate while on site. A tailgate safety briefing is required at the start of each work shift to review current work operations, current site conditions, operational safety procedures, and other pertinent safety issues.

5.0 Records

None.

6.0 Attachments

6.1 5-514-MEC/UXO Response Procedures for Non-MEC Operations

5-520-Spill Response, Incidental

1.0 Purpose and Scope

- 1.1 This procedure defines the role of Resolution Consultants employees in the event of a chemical spill in Resolution Consultants offices, laboratories, or storage areas and during field investigations, including the appropriate containment procedures that Resolution Consultants employees will follow.
- 1.2 This procedure applies to all Resolution Consultants employees and operations.

2.0 Terms and Definitions

- 2.1 **Emergency Response:** A response effort by employees from outside the immediate release area or by other designated responders (i.e., mutual aid groups, local fire departments, etc.) to an occurrence that results, or is likely to result, in an uncontrolled release of a hazardous substance or whenever a release requires that a federal or state agency be notified, such as:
 - 2.1.1 A release at or above a reportable quantity (RQ) of a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substance (40 CFR 302.8) is required to be reported to the National Response Center (NRC).
 - 2.1.2 A hazardous chemical release at or above an RQ under the Emergency Planning and Community Right-to-Know Act (EPCRA) (Title III under the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 350-372) is required to be reported to state and local officials.
 - 2.1.3 A release in violation of a facilities Spill Prevention, Control, and Countermeasure (SPCC) Plan (40 CFR 112).
- 2.2 **Incidental Releases:** A response to a spill or release of a hazardous substance (in quantities below its RQ) where the substance can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area using equipment and materials available to them at the time of the spill or release. Any spill or release that cannot be managed with the personnel, materials, and equipment at the site shall be considered an Emergency Response.
 - 2.2.1 Responses to releases of hazardous substances where there is no potential safety or health hazard (i.e., fire, explosion, or chemical exposure) are not considered to be emergency responses. Handling of incidental releases shall be in accordance with applicable standard operating procedures.

3.0 References

- 3.1 40 CFR 302.8
- 3.2 40 CFR 350-372
- 3.3 40 CFR 112
- 3.4 5-101-Emergency Response Planning, Office
- 3.5 5-203-Emergency Response Planning, Field
- 3.6 5-208-Personal Protective Equipment Program
- 3.7 5-509-Hazardous Waste Operations and Emergency Response
- 3.8 5-605-Medical Surveillance Program

4.0 Procedure

4.1 Roles and Responsibilities

- 4.1.1 **Supervisor/Project Manager** shall become the individual in charge at the incident until relieved by more qualified personnel. All Resolution Consultants emergency responders and their communications shall be coordinated and controlled through this individual. The individual in charge shall implement the Incident Command System (ICS) and shall be responsible for the following tasks:

- Designate a safety officer who is knowledgeable about the operations being implemented at the emergency response site and who will have specific responsibility to identify and evaluate hazards and to provide direction on the safety of operations for the emergency at hand. If the safety officer judges activities to be an Immediately Dangerous to Life or Health (IDLH) and/or to involve an imminent danger condition, the safety officer shall have the authority to alter, suspend, or terminate those activities. The safety official shall immediately inform the individual in charge of the ICS of any actions needed to be taken to correct these hazards at the emergency scene.
- Identify all hazardous substances or conditions present and address as appropriate site analysis, use of engineering controls, maximum exposure limits, hazardous substance, and handling procedures.
- Implement appropriate emergency operations.
- Limit the number of emergency response personnel at the emergency site.
- Implement the buddy system in groups of two or more.
- Provide standby, backup personnel with equipment ready to provide assistance or rescue. Qualified basic life support personnel, as a minimum, shall also be standing by with medical equipment and transportation as necessary.
- Verify that personal protective equipment (PPE) meets, at a minimum; the criteria contained in 29 CFR 1910.156(e) when worn while performing firefighting operations beyond the incipient stage for any incident.
- Determine if employees, who are engaged in emergency response and exposed to hazardous substances presenting an inhalation hazard or potential inhalation hazard, wear positive pressure self-contained breathing apparatus, until such time that the individual in charge of the ICS determines through the use of air monitoring that a decreased level of respiratory protection is appropriate.
- When deemed necessary for meeting the tasks at hand, an approved, self-contained, compressed air breathing apparatus may be used with approved cylinders from other approved, self-contained, compressed air breathing apparatuses provided that such cylinders are of the same capacity and pressure rating. All compressed air cylinders used with self-contained breathing apparatuses shall meet U.S. Department of Transportation and National Institute for Occupational Safety and Health criteria.
- Ensure that the PPE worn is appropriate for the hazards to be encountered.
- Implement appropriate decontamination procedures after emergency operations have terminated.
- Responsibility for the emergency response shall be transferred upon arrival of a more qualified Resolution Consultants Incident Commander or a Public Service Incident Commander.

4.1.2 Safety, Health and Environmental Manager is responsible for the following:

- Provide technical assistance to the Incident Commander regarding the correct way to respond to the spill.
- Decide whether Resolution Consultants or an outside emergency response company will clean up the spill.
- Prepare project-specific Spill Response Plans when required.
- Report spills, as necessary, to state/provincial environmental agencies.
- Review the incident report and facilitate the post-response discussion.
- Review and revise this SOP as necessary based on recommendations from post-response discussions.

4.1.3 Resolution Consultants Employees are responsible for the following:

- Follow precautions and safe handling practices to avoid spills.

- Alert Supervisor/Project Manager to any deteriorating hazardous materials containers within the office or project area.
- Report all spills and leaks to the Supervisor/Project Manager immediately.
- Secure the spill area as quickly as possible and prevent the migration of exterior spilled materials or substances to drains or other openings.

4.1.4 **First Responder Awareness Level** are those employees who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response by notifying the proper authorities of the release. They take no further action beyond notifying the authorities of the release.

First responders at the awareness level shall have sufficient training or experience to demonstrate competency in the following areas:

- An understanding of what hazardous substances are and the risks associated with them in an incident.
- An understanding of the potential outcomes associated with an emergency created when hazardous substances are present.
- The ability to recognize the presence of hazardous substances in an emergency.
- The ability to identify the hazardous substances, if possible.
- An understanding of the role of the first responder awareness individual in the employer's emergency response plan, including site security and control and the U.S. Department of Transportation's Emergency Response Guidebook.
- The ability to realize the need for additional resources and to make appropriate notifications to the communication center.

4.1.5 **First Responder Operations Level** are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures.

First responders at the operational level shall receive at least eight hours of training or have had sufficient experience to objectively demonstrate competency in the following areas in addition to those listed for the awareness level:

- Knowledge of the basic hazard and risk assessment techniques.
- Know how to select and use proper PPE provided to the first responder operational level.
- An understanding of basic hazardous materials terms.
- Know how to perform basic control, containment, and/or confinement operations within the capabilities of the resources and PPE available with their unit.
- Know how to implement basic decontamination procedures.
- An understanding of the relevant standard operating procedures and termination procedures.

4.1.6 **Hazardous Materials Technicians** are employees who respond to releases or potential releases for the purpose of stopping the release. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of release in order to plug, patch, or otherwise stop the release of a hazardous substance.

Hazardous materials technicians shall receive at least 24 hours of training equal to the first responder operations level and in addition have competency in the following areas:

- Know how to implement the employer's emergency response plan.
- Know the classification, identification, and verification of known and unknown materials by using field survey instruments and equipment.
- Be able to function within an assigned role in the Incident Command System.

- Know how to select and use proper specialized chemical PPE provided to the hazardous materials technician.
- Understand hazard and risk assessment techniques.
- Be able to perform advance control, containment, and/or confinement operations within the capabilities of the resources and PPE available with the unit.
- Understand and implement decontamination procedures.
- Understand termination procedures.
- Understand basic chemical and toxicological terminology and behavior.

4.1.7 **Hazardous Materials Specialists** are individuals who respond with and provide support to hazardous materials technicians. Their duties parallel those of the hazardous materials technician; however, those duties require a more directed or specific knowledge of the various substances they may be called upon to contain. The hazardous materials specialist would also act as the site liaison with federal, state, local, and other government authorities.

Hazardous materials specialists shall receive at least 24 hours of training equal to the technician level and in addition have competency in the following areas:

- Know how to implement the local emergency response plan.
- Understand classification, identification, and verification of known and unknown materials by using advanced survey instruments and equipment.
- Know the state emergency response plan.
- Be able to select and use proper specialized chemical PPE provided to the hazardous materials specialist.
- Understand in-depth hazard and risk techniques.
- Be able to perform specialized control, containment, and/or confinement operations within the capabilities of the resources and PPE available.
- Be able to determine and implement decontamination procedures.
- Have the ability to develop a site safety and control plan.
- Understand chemical, radiological, and toxicological terminology and behavior.

4.1.8 **On Scene Incident Commander**, who will assume control of the incident scene beyond the first responder awareness level, shall receive at least 24 hours of training equal to the first responder operations level and in addition have competency in the following areas:

- Know and be able to implement the employer's incident command system.
- Know how to implement the employer's emergency response plan.
- Know and understand the hazards and risks associated with employees working in chemical protective clothing.
- Know how to implement the local emergency response plan.
- Know the state emergency response plan and of the Federal Regional Response Team.
- Know and understand the importance of decontamination procedures.

4.1.9 **Skilled Support Personnel** who are skilled in the operation of certain equipment (such as mechanized earth moving or digging equipment or crane and hoisting equipment), who are needed temporarily to perform immediate emergency support work that cannot reasonably be performed in a timely fashion by Resolution Consultants' employees, and who will be or may be exposed to the hazards at an emergency response scene are not required to meet the training required. However, these Skilled Support Personnel shall be provided an initial briefing at the site prior to their participation in the emergency response. At a minimum, the initial briefing shall include instruction in the wearing of appropriate PPE, what chemical hazards are involved, and what duties are to be performed. All other appropriate safety

and health precautions provided to Resolution Consultants' own employees shall also be provided to any Skilled Support Personnel.

- 4.1.10 **Specialist Employees** are Resolution Consultants employees who, in the course of their regular job duties, work with and are trained in the hazards of specific hazardous substances and who will be called upon to provide technical advice or assistance at a hazardous substance release incident to the individual in charge shall receive training or demonstrate competency in the area of their specialization annually.

4.2 **Emergency Response Plan**

- 4.2.1 An emergency response plan shall be developed and implemented to handle anticipated emergencies prior to performing emergency response operations. The plan shall be in writing and available for inspection and copying by employees, their representatives, and OSHA personnel. The plan shall be reviewed and approved by the SH&E Manager prior to issue.
- 4.2.2 If contract does not require Resolution Consultants to provide emergency response services, then Resolution Consultants' SH&E Procedures found in the site specific Health and Safety Plan shall apply and employees shall evacuate from the danger area whenever an emergency occurs.
- 4.2.3 Upon completion of the emergency response, all followup remediation work shall be done in accordance with Resolution Consultants SH&E Procedure *5-509-Hazardous Waste Operations and Emergency Response*.
- 4.2.4 At a minimum, the emergency response plan shall address the following:
- Pre-emergency planning and coordination with outside parties
 - Personnel roles, lines of authority, training, and communication
 - Emergency recognition and prevention
 - Safe distances and places of refuge
 - Site security and control
 - Evacuation routes and procedures
 - Decontamination
 - Emergency medical treatment and first aid
 - Emergency alerting and response procedures
 - Critique of response and follow-up
 - PPE and emergency equipment
- 4.2.5 (Note: Local and state emergency response plans may need to be review and incorporated into the plan.)

4.3 **Training**

- 4.3.1 Training for responders shall be provided by Resolution Consultants' SH&E Manager or by individuals who have the training and/or academic credentials and instructional experience necessary to demonstrate competent instructional skills and a good command of the subject matter of the courses they are to teach. Employees who receive responder training shall also receive annual refresher training if their responding responsibilities continue.
- 4.3.2 Employees receiving initial and refresher responder training shall be issued a certificate indicating training competency. Copies of all training records shall be maintained by the Site Safety Officer.

4.4 **Medical Surveillance**

- 4.4.1 All employees participating in an emergency response shall participate in their respective employers Medical Surveillance and Monitoring Program.

4.5 **Chemical Protective Clothing**

- 4.5.1 Chemical protective clothing shall be worn in accordance with Resolution Consultants' *5-208-Personal Protective Equipment Program*.

4.6 Spill Response Equipment

4.6.1 All Resolution Consultant offices that store chemicals at their facility shall have the appropriate spill response equipment. Such equipment may include the following:

- Overpack containers of varying capacities
- Absorbent material such as vermiculite or commercially prepared, absorbent containing pillows, rolls, sheets, or booms
- Acid and base neutralizing agents
- Chemically resistant gloves for solvents, alcohols, and acids
- Polycoated Tyvek coveralls
- Safety goggles
- Respiratory protection

4.6.2 Spill response equipment shall be placed adjacent to areas where chemicals are routinely handled, stored, and/or where shipments are received. Similar types of spill response equipment shall also be available in any Resolution Consultants vehicle or rented vehicle in which chemicals are being transported. Access to the spill response equipment shall be designed to avoid likely spill locations.

4.7 Spill Response Equipment for Field Programs

4.7.1 The amount of chemicals being used during a field program will dictate the types and quantity of spill response equipment that is brought to the site. If several squirt bottles of decontamination solutions are all that is being brought to a site, a few spill pillows and a one-gallon bucket may be sufficient to respond to a spill of these materials. If gallons of chemicals are being delivered to the site in drums or bulk tanks, a greater variety of spill response equipment will be needed. As indicated previously, during these types of field programs, a separate spill plan will be incorporated into the project health and safety plan (HASP) and will provide a greater level of detail regarding the specific spill response effort for that field program.

4.8 Immediate Response

4.8.1 Evacuate all personnel that will not be involved in the clean up from the immediate area of the spill or release.

4.8.2 Take all reasonable measures to confine, repair, and remedy the effects of the spill; cleanup must be done by knowledgeable personnel and is in accordance with the product label and MSDS.

4.8.3 Use the appropriate equipment and PPE so that you do not expose yourself to any chemicals or hazardous substances.

4.8.4 Clean up teams shall be organized outside the spill area and re-enter for cleanup activities.

4.8.5 If it is not practicable to maintain the airborne concentration of a flammable gas or vapour below the applicable exposure limit, for example, in a temporary situation or an emergency,

- Only the minimum number of workers necessary for the work may be exposed,
- Every worker exposed must be adequately trained and equipped to safely perform the required duties,
- The concentration of the flammable gas or vapor must not exceed 20% of the lower explosive limit (LEL), and
- In a life-threatening emergency only, exposure of emergency response workers is permitted above 20% of the LEL, provided that only those qualified and properly trained and equipped workers necessary to correct the unsafe condition are exposed to the hazard and every possible effort is made to control the hazard while this is being done.

4.9 First Aid

4.9.1 In the event of an incident, refer to the MSDS labels to ensure proper first aid is administered for the hazardous material and call the nearest Poison Control Center or 911.

4.9.2 The American National Standards Institute (ANSI) Standard for Emergency Eyewash and Shower Equipment (ANSI Z358.1-1998) recommends that the affected body part must be flushed immediately and thoroughly for at least 15 minutes using a large supply of clean fluid under low pressure. However,

other references recommend a minimum 20-minute flushing period if the nature of the contaminant is not known. The flushing or rinsing time can be modified if the identity and properties of the chemical are known. For example, at least

- 5 minutes flushing time for mild irritants.
- 20 minutes for moderate to severe irritants.
- 20 minutes for nonpenetrating corrosives.
- 60 minutes for penetrating corrosives.
- If irritation persists, repeat the flushing procedure.

4.9.3 It is important to note that ingestion of any chemical is not likely to occur in the workplace. If ingestion does occur, evidence indicates that inducing vomiting is not necessary in most situations where there has been an occupational chemical ingestion. Induction of vomiting should only be recommended if the chemical has very high, short-term (acute) toxicity, and medical follow-up is not readily available. In these cases, first aiders should receive special training on how to safely and effectively induce vomiting in the appropriate circumstances.

4.9.4 In the unlikely event that there is an on-site release of a hazardous substance (e.g., H2S):

- Get out of the area (in an upwind direction).
- Sound an alarm.
- Assess situation.
- Put on a breathing apparatus.
- Rescue victim(s).
- Revive victim(s).
- Get medical aid.

4.10 Reporting

4.10.1 Should there be a spill or leak involving a hazardous product, employees shall immediately notify the Supervisor. The supervisor shall then make the appropriate notifications to both client and Resolution Consultants management.

4.10.2 "Dangerous occurrences" must be reported immediately to the police, employer, vehicle owner/lesser and the dangerous goods owner. Such events would include spills, bulk container damage, fire, explosion, and transportation accidents involving dangerous goods.

4.10.3 Confirm and seek direction on external reporting requirements.

- A major release of a hazardous substance must be reported to the appropriate provincial or territorial governing body for Occupational Health and Safety.
- All spills and releases must be reported to the governing regulatory body. Each jurisdiction has regulations governing the minimum quantities for reporting based on the type of product spilled or released.

4.10.4 If you have knowledge of spill, release, or unlawful discharge, notify authorities immediately. Reporting does not imply guilt or assign blame. You will need to report the following details.

- Location and time of spill.
- Description of circumstances leading to spill.
- Type and quantity of material or substance spilled.
- Details of any action taken at the site of the spill.
- Description of location of spill and immediately surrounding the area.
- Any additional information in respect of the spill that the Minister, environmental protection officer or person designated by regulations requires.

5.0 Records

None.

6.0 Attachments

None.

5-603-Incident Investigation and Review

1.0 Purpose and Scope

- 1.1 Provide that all SH&E incidents are investigated in a timely and thorough manner. For all recordable, serious and fatalities, provide a formal incident investigation process.
- 1.2 Additionally, ensure that appropriate Lessons Learned are gathered from all SH&E incidents and that information is shared regarding lessons learned throughout the organization.
- 1.3 This procedure applies to all Resolution Consultants employees and operations.

2.0 Terms and Definitions

- 2.1 **Responsible Lead Investigator (RLI):** Manager responsible for the incident investigation.
- 2.2 **SRI:** Supervisor's Report of Incident .
- 2.3 **SH&E Incidents:** A potentially work-related event which is unplanned, possibly harmful or damaging, and which may result in personal injury, environmental impact, or loss or may impact the reputation of Resolution Consultants or its clients or may result in an investigation by a regulatory agency or insurer.

3.0 References

- 3.1 5-004-Incident Reporting

4.0 Procedure

4.1 Initial post-incident response procedure by office/project team as it relates to an incident investigation and review

- 4.1.1 Immediate steps to be taken by local field/office personnel:
 - Confirm corrective actions that have been put in place to eliminate or control identified hazards at the scene.
- 4.1.2 Secure the area. Do not disturb the scene until relevant facts are obtained unless an immediate hazard exists.
- 4.1.3 Prepare appropriate sketches and or obtain photographs of the incident scene and gather relevant information from the scene (Who, What, Where, When and other "environmental factors" that may have had an influence on the incident).
- 4.1.4 Interview witnesses and document responses as soon as possible at the scene of the incident.

4.2 Follow-up Investigation

- 4.2.1 **Identify Responsible Lead Investigator and Formation of Team.**
 - The **Responsible Lead Investigator (RLI)** An appropriate team member will be designated to be the RLI for any investigation covered by this procedure. That determination will be made based off of technical capabilities, relevant work experience, and the ability to demonstrate critical thinking skills.
 - The **RLI** shall contact Resolution Consultants SH&E Manager to ask if legal counsel will be needed in the investigation. If so, the incident investigation report will be marked as "Attorney Privileged Communication."

The RLI will appoint an appropriate team to conduct and document the required investigation.

4.2.2 Investigation Team Procedures

- The team will follow an appropriate investigation technique (as agreed to by the **RLI**, **Resolution Consultants SH&E Manager** and Resolution Consultants in-house counsel) to determine the following:
 - Sequence of events leading up to the incident and steps followed immediately following the incident that may have had an impact on the final outcome.
 - Identification of the People, Parts/Equipment, Position and Paper/Documentation factors involved in the incident.
 - Determination of direct cause(s) and root causes using techniques agreed to by the **RLI** and **Resolution Consultants SH&E Manager**. (Note: Example root cause investigation tools include “5 Why’s”, TapRoot, Fishbone Diagram, etc.).
- The Investigation Team will prepare a preliminary report, signed by the **RLI**, documenting all findings and recommended corrective actions within 10 business days following the incident. If necessary, the report shall be prepared at the direction of in-house counsel and shall be marked “Attorney Privileged Communication”.
- An Investigation Review Call will be held to review the preliminary investigation report. Required participants for the call will include:
 - **Responsible Lead Investigator**.
 - Responsible Supervisor or **Project Manager** of the injured/involved employee.
 - Resolution Consultants **SH&E Manager**.
 - Resolution Consultants **Legal Counsel**, when required.
 - Additional personnel as deemed necessary by the Resolution Consultants Management Committee.
- Note: Incident Review Calls are designed to summarize the preliminary investigation findings and come to agreement on contributing factors, root causes and appropriate corrective actions.
- The **RLI** will extend an invitation to the **Program Manager** at least 5 days prior to the scheduled review date. The **Program Manager** will extend an invitation to other senior and executive management members based on a preliminary assessment of the incident:
 - Final investigation reports (following incident review call where required) are to be forwarded to the **Resolution Consultants SH&E Manager** for inclusion in the permanent incident files.

4.2.3 Communication of Investigation Results

- **Any and all written investigation reports must first be reviewed by Program Manager, or the Chief Counsel’s designee. All drafts shall include “Attorney-Client Work-Product Privilege” at the top of such reports.**
- Where appropriate based on the type, severity and/or scope of the incident, a formal Alert will be prepared by the **RLI** and **Resolution Consultants SH&E Manager**. The Alert will be communicated to the most appropriate audience (i.e. regional, national, business line only, etc.).
- Action items and corrective actions identified by the **RLI** and investigation teams will be tracked to completion by the **Resolution Consultants SH&E Manager**. Additionally, the results will be utilized by the SH&E department to develop appropriate regional, national and business line level reports and to improve existing procedures.

4.3 Roles and Responsibilities

4.3.1 **Office Managers, Project Managers, Field Task Managers** are responsible to:

- Lead/participate in the formal Incident Investigation process as required by this procedure. Managers should consult with the appropriate Resolution Consultants in-house counsel before conducting any formal investigation of a serious SH&E incident or engaging in any discussion outside of Resolution Consultants.
- Schedule and conduct Incident Review calls as required by this procedure.

4.3.2 **Supervisors** are responsible for the following:

- Lead/Participate in formal Incident Investigation as required by this procedure.

4.3.3 **Resolution Consultants SH&E Manager** is responsible for the following:

- Provide training on incident investigation techniques and tools to selected investigation teams.
- Initiate an investigation for all incidents by contacting the **RLI** and establishing the team, report format, and deadlines.
- Participate (following consultation with Resolution Consultants in-house counsel) on investigation teams and Incident Review Calls when requested by the **Responsible Lead Investigator**.
- Track and report on the status of all action items identified within final Incident Investigation Reports.
- Provide final Incident Investigation Report to the Program Manager prior to inclusion in permanent incident files.

4.3.4 **Employees** involved in an SH&E incident must assist supervisor in completing/ conducting appropriate incident investigations.

5.0 Records

None.

6.0 Attachments

None.

Attachment 5

Daily Safety Meeting Form (SWAP)

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Resolution Consultants

Daily Safe Work Assessment & Permit (SWAP)

This form must be filled out daily prior to work in the field and reviewed with all project personnel in a daily safety brief. The SWAP is to be completed before each work day to continually assess and communicate project-related hazards. Please have all SWAPs initiated by the Project Manager or Supervisor after returning from the field and place all completed SWAPs in the project file.

Section 1: Project Information

Project/Client Name: _____ SWAP Date/Time: _____
 Location of the Work: _____ Project Number: _____
 Description of Work: _____

Has a HASP been created for this job? Yes No If Yes, has the HASP been reviewed prior to work? Yes No

Section 2: Identify hazards associated with tasks and tools FOR THIS DAY:

Critical Safety Tasks are listed below: (If answered "Yes" please call H&S for additional guidance/checks)

	Yes	No		Yes	No
Performing work in Confined Spaces - - - - -	<input type="checkbox"/>	<input type="checkbox"/>	Use of Respiratory Protection- - - - -	<input type="checkbox"/>	<input type="checkbox"/>
Hazardous Chemical Exposure- - - - -	<input type="checkbox"/>	<input type="checkbox"/>	Involvement with Lockout/Tagout Activities - - -	<input type="checkbox"/>	<input type="checkbox"/>
Falls Greater than Six (6) Feet- - - - -	<input type="checkbox"/>	<input type="checkbox"/>	Trenching or Excavation - - - - -	<input type="checkbox"/>	<input type="checkbox"/>

List each task that presents hazards and identify controls you will take to minimize risk. If No hazards were identified, write NONE in the first Task box. All additional project personnel involved must initial the bottom of each task identified below signifying that they have reviewed this information. Use back of SWAP as necessary for General Safety and Precautions, and to add additional hazards.

Following is a non-inclusive list of potential hazards.

- Chemicals (inhalation, dermal)
- Biologic Hazards (poison ivy, ants, snakes)
- Potentially unsafe area or neighborhood
- Sampling around heavy equipment (backhoe bucket, Vac. Truck, etc.)
- Working around high noise (> 85 dBA)
- Activities that require coring or drilling
- Drilling around underground utilities
- Work with equipment around power lines
- Slick, uneven walking/working surfaces
- Climbing ladders / scaffolds
- Using gas or propane powered equipment in enclosed areas
- Work in extreme heat (> 104°F) or extreme cold (<30°F)
- Working around heavy equipment / traffic
- Power tools (hammer drills, auger, etc.)
- Working with lifting / hoisting equipment
- Vehicular traffic, fork lifts, scissors lifts
- Inclement weather (lightning, high winds)
- Work with ergonomic hazards (lifting hazards, twisting, excessive repetitive)
- Working in proximity to deep water > 3ft
- Remote location w/ limited communication

Task: _____

Hazards: _____

Controls: _____

Attachment 6

Contractor Significant Incident Report

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EnSafe Investigation Report

Select the report type: ___ near miss - ___ incident - ___ injury

1. Dates					
Of Near Miss/Incident/Injury		Investigation Started		Investigation Completed	
Date of event		Date investigation started, hopefully the day of the event.		Date that all parties agree on the findings and corrective actions.	
2. Location			3. Time		
Where did this event occur? Provide as much detail as possible.			What time of the day did the event occur? Approximate if able, if you are not able then just list unknown.		
4. EnSafe Employees					
Injured		Involved		Witnesses	
Injured EnSafe personnel		Other EnSafe personnel involved.		Any EnSafe personnel who witnessed the event.	
5. Others					
Injured		Involved		Witnesses	
Injured 'Other' personnel		Other' personnel involved.		Any 'Other' personnel who witnessed the event.	
6. Injured					
Name	Length of time with employer	EnSafe Employee Yes/no	Job Title or Occupation	How long assigned to job	Nature and Extent of Injury
	If known.		If known.	If known.	If known.
7. Equipment/Tools/Vehicles Involved					
Item:					
List all items that were involved with the incident such as vehicles, power tools, heavy equipment, etc.					
Damage:					
If anything was damaged, please list.					
Ownership:					
List who owns the equipment.					

8. Description

Events leading up to:

What was occurring right before the event. Ex: Employee was collecting samples from the bucket of an excavator.

Accident/Incident/Event/Illness:

What was the event? Ex: Employee was collecting sample from the bucket when he slipped into the excavation hole.

Contributing Factors:

This is where we talk about 'other' things that may have contributed to the event: Ex: Ground was wet from a morning rainstorm and this created a slick walking surface which contributed to the employee losing his footing and falling into the excavation. Furthermore, the sample point was too close to the excavation.

9. Cause

Immediate Cause:

This is the main (immediate) reason that the event occurred. Ex: Employee stood too closely to the excavation area and fell into the excavation.

Root Cause:

This is the point that you look deeply to trace the problem back to the root. You have to ask yourself the hard questions that are not so obvious. Your thought process should be: Why was the employee so close to the excavation? Were there issues with the excavator's reach capability? What protocol exists that dictates how closely the employee is allowed to the excavation? If the employee was too close why didn't someone force the move back to a safe location? Has there been a lack of enforcement of safety protocol on the jobsite? NOTE: This section is never enjoyable but it is the most critical. If you fail to identify the root cause you will not be able to prevent the problem from manifesting itself again.

10. Policy, Work Rule, Regulation, Standard

Applicable:

Do we have any governance in place to help prevent this from occurring?

Violations:

If we do have governance in place, was their a violation of those policiies? If so was it intentional or unintentional.

11. Recommendations

To Prevent Recurrence:

This is where we provide instructions and thoughts on the different ways that we can prevent the event from occurring again. This needs to provide enough detail that it can be read and understood by a broad audience during distribution.

Additional Training:

List any training here that might help to prevent this from occurring again.

12. Investigation Team

Leader:	Usually the senior person on-scene.	Members:	Additional people who assisted with preparing or reviewing the report.
Signature:			
Date:	Date of the report being final.		

13. Review

Reviewed by	Signature	Date
Usually the Project Manager		
Usually the Corporate HS Manager		
Any 'other' personnel		

Comments:

Comments from those who are reviewing the report.

14. Corrective Action

Action	Date	Signature
1 Corrective actions listed here.	Date action put in place.	Person who carried out the corrective action.
2.		
3.		
4.		
5.		
6.		

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Attachment 7

Material Safety Data Sheets

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CITGO PETROLEUM CORP -- NO 2 FUEL OILS, DIESEL FUELS-ALL GRADES, 1763 --
9150-00N060728

=====
Product Identification
=====

Product ID:NO 2 FUEL OILS, DIESEL FUELS-ALL GRADES, 1763
MSDS Date:11/11/1994
FSC:9150
NIIN:00N060728
MSDS Number: BXWZC
=== Responsible Party ===
Company Name:CITGO PETROLEUM CORP
Box:3758
City:TULSA
State:OK
ZIP:74102
Country:US
Info Phone Num:918-495-5933
Emergency Phone Num:800-424-9300 (CHEMTREC)
CAGE:1JW40

==== Contractor Identification ===

Company Name:CITGO PETROLEUM CORP
Address:OFF HWY 108
Box:3758
City:LAKE CHARLES
State:LA
ZIP:70602
Country:US
Phone:918-561-5165
CAGE:1JW40
Company Name:CITIES SERVICE CO
Address:110 W 7TH
Box:300
City:TULSA
State:OK
ZIP:74102
Country:US
CAGE:12518

=====
Composition/Information on Ingredients
=====

Ingred Name:NO INGREDIENT FOR THIS FORMULATION_INGREDIENT

=====
Hazards Identification
=====

LD50 LC50 Mixture:SEE INGREDIENTS
Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:LOW HAZ UNDER AMBIENT CNDTNS. VAPS,
MISTS & FUMES HAZ. NORMALLY OF LOW TOX EXCEPT ON INGEST, IF MISTING
OCCURS/DERM ABSORP. ACUTE:INHAL:MISTS/FUMES ABOVE TLV MAY CAUSE
TRANSIENT EUPHORIA, RESP & GI IRRIT, HDCH, DIZZ, CNS & GENERALIZED
DEPRESS, COMA, PARTICULARLY IN OXYG-DEFICIENT ATM. PULM IRRIT.
SKIN:(EFTS OF OVEREXP)
Explanation of Carcinogenicity:NOT RELEVANT
Effects of Overexposure:HLTH HAZS:MILD TEMP IRRIT. EYES:MILD TO MOD
IRRIT. INGEST:TOX DOSE:1 OZ TO 1 PINT FOR HUMAN ADULT. SYMPS

INCLUDE BURNING OF MOUTH & UPPER GI TRACT, VOMIT & DIARR. LESS THAN 1 OZ W/RETENTION MAY PRDCE GEN DEPRESS, SEDATION, RESP & CARDIAC INSUFFICIENCY & COMA. INJECTION:IRRIT, ERYTHEMA, EDEMA. CHRONIC:PRLNGD, (ING 10)

Medical Cond Aggravated by Exposure:PRE-EXISTING DERMATOSIS.

=====
===== First Aid Measures =====

First Aid:INHAL:REMOVE FROM EXPOS, SEEK IMMED MED AID. SKIN:WASH W/SOAP & WATER. DO NOT WEAR HEAVILY CONTAM CLTHG BEFORE CLEANING. EYES:FLUSH W/LG VOLS OF TEPID WATER FOR @ LST 15 MIN. INGEST:DO NOT INDUCE VOMI T. SEEK MED AID. INJECTION:SEEK IMMED MED AID. NOTE TO MD:THIS IS LOW VISCOSITY MATL, W/SAYBOLT VISCOSITY @ 100F OF 32.6-40 SUS. IF INGEST & VOMIT OCCURS, THERE EXISTS HIGH PULM ASPIR HAZ, (SUP DAT)

=====
===== Fire Fighting Measures =====

Flash Point Method:CC
Flash Point:>126F,>52C
Extinguishing Media:CO*2, DRY CHEMICAL, FOAM, WATER FOG.
Fire Fighting Procedures:WEAR NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT .
Unusual Fire/Explosion Hazard:MATERIAL IS HIGHLY VOLATILE AND EMITS VAPORS WHICH MAY BE IGNITED BY OTHER IGNITION SOURCES.

=====
===== Accidental Release Measures =====

Spill Release Procedures:REMOVE SOURCES OF IGNIT, VENT AREA. SM SPILLS:TAKE UP W/NONCOMBUST ABOSRB SUCH AS FULLERS EARTH/SAND. PLACE INTO CNTNRS FOR LATER DISP. LG SPILLS:CNTN SPILL IN EARTHEN DIKES FOR LATER RECOVERY. CTL IG NIT SOURCES AROUND SPILL AREA. FIRE-FIGHT (ING 4)
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

=====
===== Handling and Storage =====

Handling and Storage Precautions:KEEP CNTNR TIGHTLY CLSD & AWAY FROM HEAT & FLAME. DO NOT STORE W/STRONG OXIDIZERS. CAUTN:COMBUST LIQ. DO NOT INHALE VAPS, FUMES/MISTS. PVNT DERM CONT.
Other Precautions:CAUTN:EMPTY CNTNRS MAY CNTN PROD RESIDUE WHICH COULD INCLUDE FLAM/EXPLO VAPS. CONSULT FED, STATE & LOC AUTHS BEFORE REUSING, RECNDTNING, RECLAIMING, RECYCLING/DISP OF EMPTY CNTNRS &/OR WASTE RESIDUES OF PROD. PROT MEASURES DURING (ING 7)

=====
===== Exposure Controls/Personal Protection =====

Respiratory Protection:NIOSH/MSHA APPROVED ORGANIC RESPIRATOR ABOVE THE TLV'S.
Ventilation:USE IN WELL VENT AREA. IN CONFINED SPACES, MECH VENT MAY BE REQ TO KEEP LEVELS OF CERTAIN COMPONENTS BELOW (ING 9)
Protective Gloves:OIL IMPERVIOUS GLOVES.
Eye Protection:ANSI APPRVD CHEM WORKERS GOGGS &(SUPDAT)
Other Protective Equipment:ANSI APPRVD EMER EYE WASH & DELUGE SHOWER . WEAR BODY-COVERING WORK CLTHS TO AVOID PRLNGD/RPTD EXPOS.
Work Hygienic Practices:WASH EXPOSED SKIN THOROUGHLY WITH SOAP AND WATER. LAUNDRER SOILED WORK CLOTHES BEFORE REUSE.

Supplemental Safety and Health

APPEAR & ODOR:OIL/DIESEL FUEL:WATER WHITE TO LEMON LIQ, PETROL ODOR.
FIRST AID PROC:POSS INDUCING LIPOID PNEUM. FOR QTYS >FEW DROPS, USE
CAREFUL GASTRIC LAVAGE W/TIGHT FITTING, CUFFED ENDOTRACHEAL TUB E.
EYE PROT:FULL LENGTH FACE SHIELD

===== Physical/Chemical Properties =====

Boiling Pt:B.P. Text:>342F,>172C
Vapor Density:>1
Spec Gravity:0.87 (H*20=1)
Evaporation Rate & Reference:<1 (BUTYL ACETATE=1)
Solubility in Water:NEGLIGIBLE
Appearance and Odor:HIGH SULFUR FUEL OIL/DIESEL FUEL:RED LIQ, PETROL
ODOR. LOW SULFUR FUEL (SUP DAT

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
CAUSTICS, OXIDIZING AGENTS AND STRONG ACIDS.
Stability Condition to Avoid:HEAT, FLAME.
Hazardous Decomposition Products:CO*2, (CO UNDER INCOMPLETE
COMBUSTION).

===== Disposal Considerations =====

Waste Disposal Methods:DISP MUST BE I/A/W FED, STATE & LOC REGS IT IS
RESPONSIBILITY OF USER TO DETERM IF MATL IS HAZ WASTE AT TIME OF
DISP. CHECK BEFORE DISPOSING TO BE SURE YOU ARE IN COMPLIANCE W/ALL
APPLIC LAWS & REGS. RCRA EMER HOTLINE #:800-424-9346.

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assume responsibility for the suitability of this information to their
particular situation.

CITGO PETROLEUM CORP -- GASOLINES-ALL GRADES UNLEADED, 1600 -- 9140-00N060727

=====
Product Identification
=====

Product ID:GASOLINES-ALL GRADES UNLEADED, 1600
MSDS Date:10/21/1994
FSC:9140
NIIN:00N060727
MSDS Number: BXWZB
=== Responsible Party ===
Company Name:CITGO PETROLEUM CORP
Box:3758
City:TULSA
State:OK
ZIP:74102
Country:US
Info Phone Num:918-495-5933
Emergency Phone Num:800-424-9300 (CHEMTREC)
CAGE:1JW40

==== Contractor Identification ====

Company Name:CITGO PETROLEUM CORP
Address:OFF HWY 108
Box:3758
City:LAKE CHARLES
State:LA
ZIP:70602
Country:US
Phone:918-561-5165
CAGE:1JW40
Company Name:CITIES SERVICE CO
Address:110 W 7TH
Box:300
City:TULSA
State:OK
ZIP:74102
Country:US
CAGE:12518

=====
Composition/Information on Ingredients
=====

Ingred Name:PETROLEUM DISTILLATES; (PETROLEUM DISTILLATES MFR CAS #:MIXTURE)
Fraction by Wt: 85-98%
OSHA PEL:N/K
ACGIH TLV:N/K

Ingred Name:BENZENE (SARA 313) (CERCLA); LD50 (ORAL,RAT) :>5.0 G/KG
CAS:71-43-2
RTECS #:CY1400000
Fraction by Wt: <5%
OSHA PEL:SEE 1910.1028
ACGIH TLV:10 PPM; A2
EPA Rpt Qty:10 LBS
DOT Rpt Qty:10 LBS

Ingred Name:LOWER ALIPHATIC ALCOHOLS; LD50 (ORAL,RAT) :>5.0 G/KG

Fraction by Wt: 0-11%
OSHA PEL:N/K
ACGIH TLV:N/K

Ingred Name:LOWER ALIPHATIC ETHERS; LD50 (ORAL,RAT):4 ML/KG
Fraction by Wt: 0-15%
OSHA PEL:N/K
ACGIH TLV:N/K

Ingred Name:TERT-BUTYL ALCOHOL; (TERTIARY BUTYL ALCOHOL) (SARA 313)
CAS:75-65-0
RTECS #:EO1925000
Fraction by Wt: 0-10%
OSHA PEL:100 PPM
ACGIH TLV:100 PPM

Ingred Name:BENZENE ETHYL-; (ETHYL BENZENE) (SARA 313)
CAS:100-41-4
RTECS #:DA0700000
Fraction by Wt: 0-5%
OSHA PEL:100 PPM
ACGIH TLV:100 PPM
EPA Rpt Qty:1000 LBS
DOT Rpt Qty:1000 LBS

Ingred Name:ETHER, TERT-BUTYL METHYL; (METHYL-T-BUTYL ETHER) (SARA 313)
(CERCLA)
CAS:1634-04-4
RTECS #:KN5250000
Fraction by Wt: 0-15%
OSHA PEL:N/K
ACGIH TLV:N/K
EPA Rpt Qty:1 LB
DOT Rpt Qty:1 LB

Ingred Name:TOLUENE (SARA 313) (CERCLA)
CAS:108-88-3
RTECS #:XS5250000
Fraction by Wt: 0-25%
OSHA PEL:200 PPM
ACGIH TLV:S, 50 PPM
EPA Rpt Qty:1000 LBS
DOT Rpt Qty:1000 LBS

Ingred Name:BENZENE, 1,2,4-TRIMETHYL-; (1,2,4-TRIMETHYLBENZENE) (SARA 313)
CAS:95-63-6
RTECS #:DC3325000
Fraction by Wt: 0-5%
OSHA PEL:25 PPM
ACGIH TLV:25 PPM

Ingred Name:XYLENE; (XYLENE (MIXED ISOMERS)) (SAR
CAS:1330-20-7
RTECS #:ZE2100000
EPA Rpt Qty:1000 LBS
DOT Rpt Qty:1000 LBS

=====
Hazards Identification
=====

LD50 LC50 Mixture:SEE INGREDIENTS
Routes of Entry: Inhalation:YES Skin:YES Ingestion:NO
Reports of Carcinogenicity:NTP:YES IARC:YES OSHA:YES
Health Hazards Acute and Chronic:ACUTE:INHAL:MOD RISK OF VAP INTOX.
MAJOR RISK IN ENCLSD SPACES W/POOR VENT:EUPHORIA, LUNG IRRIT &
EDEMA, HDCH, DIZZ, DROW, CONVLS, COMA, CYANOSIS, GENERALIZED
DEPRESSION. SKIN:DEFATTING W/DRYING. EYE: IRRIT. INGEST:BURNING OF
MOUTH & UPPER GI TRACT, VOMIT & DIARR. ABOVE 1 OZ/< 1 OZ
W/RETENTION:GENERAL (EFTS OF OVEREXP)
Explanation of Carcinogenicity:BENZENE:IARC MONOGRAPHS, SUPP, VOL 7, PG
20, 1987:GROUP 1. NTP 7TH ANNUAL RPT ON CARCINS, 1994:KNOWN TO BE
(SUP DATA)
Effects of Overexposure:HLTH HAZS:DEPRESS, SEDATION, RESP DEPRESS,
COMA. CHRONIC:SKIN:DRYING (DERM). INHAL:BENZENE HAS BEEN CLASSIFIED
AS LEUKEMOGEN, & MAY PRDCE ANEMIA, LEUKEMIA FROM RPTD/PRLNGD EXPOS
TO HIGH CONCS. AMERICA N PETROL INSTITUTE SPONSORED CHRONIC INHAL
STUDIES OF UNLEADED GASOLINE VAPS INDICATING UNLEADED GASOLINE IS
(ING 12)
Medical Cond Aggravated by Exposure:PRE-EXISTING DERMATOSES.

=====
First Aid Measures
=====

First Aid:INHAL:REMOVE TO FRESH AIR. RESP SUPPORT, IF NEC. SEEK MED
AID. SKIN:WASH W/SOAP & WATER. DO NOT WEAR HEAVILY CONTAM CLTHG
BEFORE CLEANING. EYES:FLUSH W/LG VOLS OF WATER FOR AT LST 15 MIN.
SEEK MED AID . INGEST:DO NOT INDUCE VOMIT. SEEK MED AID. NOTE TO
MD:THIS IS LOW VISCOSITY MATL W/SAYBOLT VISCOSITY @ 100F OF <40
SUS. PULM HIGH ASPIR HAZ, POSS PRDCING LIPOID PNEUM IF SWALLOWED &
VOMIT (ING 14)

=====
Fire Fighting Measures
=====

Flash Point Method:COC
Flash Point:-45F,-43C
Lower Limits:1.4%
Upper Limits:7.6%
Extinguishing Media:CO*2, DRY CHEMICAL, FOAM, WATER FOG.
Fire Fighting Procedures:WEAR NIOSH/MSHA APPROVED SCBA & FULL
PROTECTIVE EQUIPMENT .
Unusual Fire/Explosion Hazard:MATERIAL IS HIGHLY VOLATILE AND EMITS
VAPORS WHICH MAY BE IGNITED BY OTHER IGNITION SOURCES.

=====
Accidental Release Measures
=====

Spill Release Procedures:REMOVE SOURCES OF IGNIT, VENT AREA. SM
SPILLS:TAKE UP W/NON-COMBUST ABSORB SUCH AS FULLERS EARTH/SAND.
PLACE INTO CNTNRS FOR LATER DISP. LG SPILL:CNTN IN EARTHEN DIKES
FOR LATER RECOVERY. CTL IGNIT SO URCES AROUND SPILL AREA.
FIRE-FIGHTING (ING 15)
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

=====
Handling and Storage
=====

Handling and Storage Precautions:KEEP CNTNR TIGHTLY CLSD & AWAY FROM

HEAT & FLAME & STRONG OXIDIZERS (NFPA CLASS 1A FLAM). DO NOT STORE W/STRONG OXIDIZERS.

Other Precautions:CAUTN:EMPTY CNTNRS MAY CNTN PROD RESIDUE WHICH COULD PRDCE FLAM & EXPLO VAPS. CONSULT APPROP FED, STATE & LOC AUTHS BEFORE REUSING, RECNDNTING, RECLAIMING, RECYCLING/DISP OF EMPTY CNTNRS &/OR WASTE RE SIDUES OF PROD. PROT MEASURES (ING 22)

=====
===== Exposure Controls/Personal Protection =====

Respiratory Protection:IF HIGH VAPOR CONCENTRATION IS EXPECTED, USE NIOSH/MSHA APPROVED ORGANIC RESPIRATOR. TLV:TWA: 300 PPM (900 MG/M3) STEL:500 PPM (1500 MG/M3) ACGIH-1987-88.

Ventilation:USE IN WELL VENT AREA. IN CONFINED SPACE, MECH VENT MAY BE REQ TO KEEP LEVELS OF CERTAIN COMPONENTS BELOW (ING 20)

Protective Gloves:OIL IMPERVIOUS GLOVES, SUCH AS (ING 21)

Eye Protection:ANSI APPROVED CHEM WORKERS GOGGS .

Other Protective Equipment:ANSI APPRVD EMER EYE WASH & DELUGE SHOWER . WEAR BODY-COVERING GARMENTS TO PVNT PRLNGD/RPTD DIRECT DERM EXPOS.

Work Hygienic Practices:WASH EXPOSED SKIN THORO WITH SOAP AND WATER. LAUNDRER GASOLINE SOAKED CLOTHING BEFORE REUSE.

Supplemental Safety and Health

BP:>79F,>26C (SUBJECT TO SEASONAL CHANGE). VP:7-15 (MEETS SEASONAL RVP REQS SPECIFIED BY EPA). APPEAR & ODOR:LIQ, GASOLINE ODOR. MIDGRADE:LIGHT YELLOW, TO PINK, TO LIGHT RED, GASOLINE ODOR. EXPLAN OF CARCIN:CARCIN. FED REGISTER, VOL 52, PG34460, 1987:OSHA-CANCER HAZ HUMAN:MYELOID LEUKEMIA, HODGKINS DISEASE, LYMPHOMA.

=====
===== Physical/Chemical Properties =====

Boiling Pt:B.P. Text:SUPP DATA

Vapor Pres:SUPP DATA

Vapor Density:3-4

Spec Gravity:0.75 (H*20=1)

Evaporation Rate & Reference:>1 (BUTYL ACETATE=1)

Solubility in Water:NEGLIGIBLE

Appearance and Odor:UNLEADED:LIGHT YELLOW OR CLEAR LIQ, GASOLINE ODOR. PREMIUM:RED CLEAR (SUPP DATA

Percent Volatiles by Volume:HIGH

=====
===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

STRONG OXIDANTS, STRONG ACIDS, CAUSTICS.

Stability Condition to Avoid:HIGH TEMPERATURE, FLAME.

Hazardous Decomposition Products:CO*2, (CO UNDER INCOMPLETE COMBUSTION).

=====
===== Disposal Considerations =====

Waste Disposal Methods:DISP MUST BE I/A/W FED, STATE & LOC REGS IT IS RESPONSIBILITY OF USER TO DETERM IF MATL IS HAZ WASTE AT TIME OF DISP. CHECK BEFORE DISP TO BE SURE YOU ARE IN COMPLIANCE W/ALL APPLIC LAWS & REGS. RCRA EMER HOTLINE #:800-424-9346.

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SHERWIN-WILLIAMS COMPANY SPRAYON PRODUCTS GROUP -- S03700
QUICKMARK WATERBASED MARKING PAINT(OTHER INFORMATION) -- -

=====
Product Identification
=====

Product ID:S03700 QUICKMARK WATERBASED MARKING PAINT(OTHER INFORMATION)

MSDS Date:06/28/1999

FSC:NIIN:Submitter:N EN

Status Code:A

MSDS Number: CKWSX

=== Responsible Party ===

Company Name:SHERWIN-WILLIAMS COMPANY SPRAYON PRODUCTS GROUP

Address:101 PROSPECT AVENUE N.W.

City:CLEVELAND

State:OH

ZIP:44115

Country:US

Info Phone Num:800-777-2966

Emergency Phone Num:216-566-2917

CAGE:54646

=== Contractor Identification ===

Company Name:SHERWIN-WILLIAMS COMPANY SPRAYON PRODUCTS GROUP

Address:101 PROSPECT AVENUE N.W.

Box:City:CLEVELAND

State:OH

ZIP:44115

Country:US

Phone:800-777-2966

CAGE:54646

=====
Composition/Information on Ingredients
=====

Ingred Name:PROPANE: VP: 760.00.

CAS:74-98-6

RTECS #:TX2275000

= Wt:16.

OSHA PEL:1000 PPM

ACGIH STEL:2500 PPM

Ingred Name:LIGHT ALIPHATIC HYDROCARBON SOLVENT. (MFR CAS #68410-97-9).

VP: 100.00

= Wt:18.

Ingred Name:MINERAL SPIRITS. (MFR CAS # 64742-88-7). VP: 2.00.

CAS:64475-85-0

RTECS #:PY8240000

= Wt:6.

OSHA PEL:100 PPM

ACGIH TLV:100 PPM

Ingred Name:ETHYLBENZENE. VP: 7.10.

CAS:100-41-4

RTECS #:DA0700000

= Wt:2.

OSHA PEL:100 PPM

OSHA STEL:125 PPM

ACGIH TLV:100 PPM

ACGIH STEL:125 PPM
EPA Rpt Qty:1000 LBS
DOT Rpt Qty:1000 LBS

Ingred Name:XYLENE. VP: 5.90
CAS:1330-20-7
RTECS #:ZE2100000
= Wt:9.
OSHA PEL:100 PPM
OSHA STEL:150 PPM
ACGIH TLV:100 PPM
ACGIH STEL:150 PPM
EPA Rpt Qty:1000 LBS
DOT Rpt Qty:1000 LBS

=====
===== Hazards Identification =====

Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:ACUTE: EFFECTS OF OVEREXPOSURE:
IRRITATION OF EYES, SKIN AND RESPIRATORY SYSTEM. MAY CAUSE NERVOUS
SYSTEM DEPRESSION. EXTREME OVEREXPOSURE MAY RESULT IN
UNCONSCIOUSNESS AND POSSIBLY DEATH. CHRONIC: PROLONGED
OVEREXPOSURE TO SOLVENT INGREDIENTS MAY CAUSE ADVERSE EFFECTS TO
LIVER, URINARY AND REPRODUCTIVE SYSTEMS. REPORTS HAVE ASSOCIATED
REPEATED OR PROLONGED OVER EXPOSURE TO SOLVENTS WITH PERMANENT
BRAIN AND NERVOUS SYSTEM DAMAGE.
Explanation of Carcinogenicity:NO INGREDIENT IN THIS PRODUCT IS AN
IARC, NTP OR OSHA LISTED CARCINOGEN (MFR).
Effects of Overexposure:HEADACHE, DIZZINESS, NAUSEA, AND LOSS OF
COORDINATION ARE INDICATIONS OF EXCESSIVE EXPOSURE TO VAPORS OR
SPRAY MISTS. REDNESS AND ITCHING OR BURNING SENSATION MAY INDICATE
EYE OR EXCESSIVE SKIN EXPOSURE.
Medical Cond Aggravated by Exposure:NONE GENERALLY RECOGNIZED.

=====
===== First Aid Measures =====

First Aid:IF INHALED: IF AFFECTED, REMOVE FROM EXPOSURE. RESTORE
BREATHING. KEEP WARM & QUIET. IF ON SKIN: WASH AFFECTED AREA
THOROUGHLY WITH SOAP & WATER. REMOVE CONTAMINATED CLOTHING &
LAUNDER BEFORE RE-USE. IF IN EYES: FLUSH EYES WITH LARGE AMOUNTS
OF WATER FOR 15 MINUTES. GET MEDICAL ATTENTION. IF SWALLOWED: NEVER
GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. DO NOT INDUCE
VOMITING. GIVE CONSCIOUS PATIENT SEVERAL GLASSES OF WATER. SEEK
MEDICAL ATTENTION.

=====
===== Fire Fighting Measures =====

Flash Point:<-17.6C, 0.F
PROPELLANT <0F
Lower Limits:1.0
Upper Limits:9.5
Extinguishing Media:CARBON DIOXIDE, DRY CHEMICAL, ALCOHOL FOAM.
Fire Fighting Procedures:FULL PROTECTIVE EQUIPMENT INCLUDING
NIOSH-APPROVED SELF-CONTAINED BREATHING APPARATUS SHOULD BE USED.
WATER SPRAY MAY BE INEFFECTIVE. IF WATER USED, FOG NOZZLES
PREFERABLE. WATER MAY BE USED TO COOL CLOSED CONTAINERS TO PREVENT

PRESSURE BUILD-UP & POSSIBLE AUTOIGNITION OR EXPLOSION WHEN EXPOSED TO EXTREME HEAT.

Unusual Fire/Explosion Hazard:CLOSED CONTAINERS MAY EXPLODE (DUE TO BUILD-UP OF PRESSURE) WHEN EXPOSED TO EXTREME HEAT.

===== Accidental Release Measures =====

Spill Release Procedures:REMOVE ALL SOURCES OF IGNITION. VENTILATE AND REMOVE WITH INERT ABSORBENT.

===== Handling and Storage =====

Handling and Storage Precautions:KEEP AWAY FROM HEAT, SPARKS & OPEN FLAME. VAPORS WILL ACCUMULATE READILY & MAY IGNITE EXPLOSIVELY. DURING USE & UNTIL ALL VAPORS ARE GONE: KEEP AREA VENTILATED-DO NOT SMOKE-EXTINGUISH ALL FLAMES, PILO T LIGHTS & HEATERS. TURN OFF STOVES, ELECTRIC TOOLS & APPLIANCES & ANY (OTHER PRECAUTIONS)

Other Precautions:(HANDLING/STORAGE)-OTHER SOURCES OF IGNITION. CONSULT NFPA CODE. USE APPROVED BONDING & GROUNDING PROCEDURES. CONTENTS UNDER PRESSURE. DO NOT PUNCTURE, INCINERATE OR EXPOSE TO TEMP ABOVE 120F. HEAT FR OM SUNLIGHT, RADIATORS, STOVES, HOT WATER & OTHER HEAT SOURCES COULD CAUSE CONTAINER (STATE REG)

===== Exposure Controls/Personal Protection =====

Respiratory Protection:IF PERSONAL EXPOSURE CANNOT BE CONTROLLED BELOW APPLICABLE LIMITS BY VENTILATION, WEAR A PROPERLY FITTED ORGANIC VAPOR/PARTICULATE RESPIRATOR APPROVED BY NIOSH FOR PROTECTION AGAINST MATERIALS LISTED IN HAZARDOUS INGREDIENTS SECTION. WHEN SANDING OR ABRADING DRIED FILM, WEAR A NIOSH APPROVED DUST/MIST RESPIRATOR FOR DUST WHICH MAY BE GENERATED FROM PRODUCT.

Ventilation:LOCAL EXHAUST PREFERABLE. GENERAL EXHAUST ACCEPTABLE IF EXPOSURE TO MATLS IS MAINTAINED BELOW APPLICABLE EXPOSURE LIMITS. REFER TO OSHA STD (SUP DATA)

Protective Gloves:CHEMICAL-RESISTANT GLOVES FOR LONG/REPEATED CONTACT. NONE REQUIRED (SUP DATA)

Eye Protection:ANSI APPROVED CHEMICAL SAFETY GOGGLES AND FULL FACE SHIELD . (SUP DATA)

Other Protective Equipment:EYEWASH AND DELUGE SHOWER MEETING ANSI DESIGN CRITERIA .

Work Hygienic Practices:WASH HANDS AFTER USING.

Supplemental Safety and Health

GLOVES (CONT'D): FOR NORMAL APPLIC OF AEROSOL PRODUCTS WHERE MINIMAL SKIN CONTACT IS EXPECTED. EYE PROTECTION (CONT'D): WEAR SAFETY SPECTACLES WITH UNPERFORATED SIDESHIELD (MFR). VENT (CONT'D): 1910.9 4, 1910.107, 1910.108.

===== Physical/Chemical Properties =====

Boiling Pt:<-237.2C, -395.F

B.P. Text:<0 -395F

Melt/Freeze Pt:M.P/F.P Text:N.A.

Vapor Pres:SEE OTHER INFO.

Vapor Density:HEAV AIR

Spec Gravity:0.81

pH:7.0

VOC Grams/Liter:6.75

Evaporation Rate & Reference:FASTER THAN ETHER
Solubility in Water:N.A.
Appearance and Odor:NO APPEARANCE OR ODOR SPECIFIED BY MANUFACTURER .
Percent Volatiles by Volume:90%

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES
NONE KNOWN.
Stability Condition to Avoid:NONE KNOWN.
Hazardous Decomposition Products:BY FIRE: CARBON DIOXIDE, CARBON
MONOXIDE.
Conditions to Avoid Polymerization:WILL NOT OCCUR.

===== Disposal Considerations =====

Waste Disposal Methods:WASTE FROM THIS PRODUCT MAY BE HAZARDOUS AS
DEFINED UNDER RCRA 40 CFR 261. WASTE MUST BE TESTED FOR
IGNITABILITY TO DETERMINE APPLICABLE EPA HAZARDOUS WASTE NUMBERS.
DO NOT INCINERATE. DEPRESSURIZE CONTAINER. DISPOSE OF IN
ACCORDANCE WITH FEDERAL, STATE & LOCAL REGULATIONS REGARDING
POLLUTION.

===== Regulatory Information =====

SARA Title III Information:SARA 313 (40 CFR 372.65C) SUPPLIER
NOTIFICATION: CAS #100-41-4: ETHYLBENZENE, 2% BY WT. CAS
#1330-20-7: XYLENE, 9% BY WT.
Federal Regulatory Information:TSCA CERTIFICATION: ALL CHEMICALS IN
THIS PRODUCT ARE LISTED, OR ARE EXEMPT FROM LISTING, ON THE TSCA
INVENTORY.
State Regulatory Information:CALIFORNIA PROPOSITION 65: WARNING:
PRODUCT CONTAINS CHEMICALS KNOWN TO STATE OF CA TO CAUSE CANCER &
BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM--ETHYLBENZENE & XYLENE.
OTHER PRECAUTIONS (CONT'D):TO BUYER. DO NOT TAKE INTERNALLY. KEEP
OUT OF REACH OF CHILDREN. INTENTIONAL MISUSE BY DELIBERATELY
CONCENTRATING & INHALING CONTENTS CAN BE HARMFUL OR FATAL. USE ONLY
WITH ADEQUATE VENTILATION. AVOID BREATHING VAPOR & SPRAY MIST. AVOID
CONTACT WITH SKIN & EYES. WASH HANDS AFTER USING. THIS COATING MAY
CONTAIN MATERIALS CLASSIFIED AS NUISANCE PARTICULATES WHICH MAY BE
PRESENT AT HAZARDOUS LEVELS ONLY DURING SANDING/ABRADING (OTHER
INFORMATION)

===== Other Information =====

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assume responsibility for the suitability of this information to their
particular situation.

Attachment 8

State Spill Reporting Procedures

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1.0 Excess Air Emissions

Report excess emissions immediately to:

Florida Warning Point Number

(850) 413-9911 (24-hour)

(800) 320-0519 (24-hour)

(850) 413-9900 (Non-emergencies)

Note: The report shall describe:

1. A description of the noncompliance and its cause.
2. The period of noncompliance, including exact dates and times.
3. If the noncompliance has not been corrected, the anticipated time it is expected to continue.
4. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

A subsequent written report may also be required.

Facilities holding an air operating permit will also have to report deviations from permit requirements in their quarterly or semiannual reports, including information on the probable cause of such deviations and any corrective actions or preventive measures taken. Likewise, facilities required to install continuous emission monitoring devices will be required to report excess emissions based on the type of facility and the type and extent of emissions.

Citation: Florida Rules and Regulations, Title 62, Sections 62-4.130, 62-4.160(8), 62-210.700(6), 62-213.440(1)(b)(3)

2.0 Hazardous Materials

Same as Hazardous Substances.

3.0 Hazardous Substances

Report any release of a hazardous substance immediately if the release exceeds the Reportable Quantity (see the Reportable Quantities section on ETConnect – US SH&E page/Resources page) for the substance (under the federal CERCLA law) for a 24-hour period. Report to:

Florida Warning Point Number**(850) 413-9911 (24-hour)****(800) 320-0519 (24-hour)****(850) 413-9900 (Non-emergencies)**

1. Florida interprets the "immediate" reporting requirement to mean within 15 minutes of an incident. If the 15-minute time frame is missed, an explanation will be required. State law also mandates reporting to the Warning Point Number within 1 working day of the release.
2. Reporting is also required for hazardous substance releases that threaten the population or the environment, or that require evacuation.
3. Releases of mixtures and solutions are subject to these notification requirements only where a component hazardous substance is released in a quantity equal to or greater than its RQ.
4. Notification of a reportable quantity of solid particles of antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, silver thallium, or zinc is not required if the mean diameter of particles is larger than 100 micrometers (0.004 inches).
5. The report should contain the following information (see **Florida Spill Form**):
 - a. Name, address, and telephone number of person reporting.
 - b. Name, address, and telephone number of person responsible for the discharge or release, if known.
 - c. Date and time of the discharge or release.
 - d. Type or name of substance discharged or released, and whether the substance is an extremely hazardous substance.
 - e. Estimated amount of the discharge or release, and the medium into which the release occurred.
 - f. Location or address of the discharge or release.
 - g. Source and cause of the discharge or release.
 - h. Size and characteristics of area affected by the discharge or release.
 - i. Containment and cleanup actions taken to date.
 - j. Any known or anticipated acute or chronic health risks associated with the emergency and, where appropriate, advice regarding medical attention necessary for exposed individuals.
 - k. Other persons or agencies contacted.

Citation: Florida Administrative Code, Title 62, Section 62-150.300

4.0 Hazardous Wastes

Report immediately (at least within 24 hours) any noncompliance that may endanger health or the environment, including the release of any hazardous waste that may endanger public drinking water supplies or the occurrence of a fire or explosion from the facility that could threaten the environment or human health outside the facility. Report to:

National Response Center
(800) 424-8802

Florida Warning Point Number
(850) 413-9911 (24-hour)
(800) 320-0519 (24-hour)
(850) 413-9900 (Non-emergencies)

The report should indicate:

1. The name, address, EPA identification number, and telephone number of the facility and its operator.
2. The name and quantity of hazardous materials involved.
3. The extent of injuries, if any.
4. An assessment of actual or potential hazards.
5. The estimated quantity and disposition of any recovered material.

A written report shall be submitted within 5 days, providing the information above and the following material:

1. A description of the noncompliance and its cause.
2. If not corrected, a description of the expected time of correction, and the steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

Citation: Florida Administrative Code, Title 62, Section 62-4.160(17)

5.0 Oil

Report all spills to waters of the state, or spills greater than 25 gallons or with the potential to be more than 25 gallons to soil or a pervious surface. Report to:

Florida Warning Point Number**(850) 413-9911 (24-hour)****(800) 320-0519 (24-hour)****(850) 413-9900 (Non-emergencies)**

1. Waters of the state include surface or underground.
2. Verbal report should include:
 - a. Name, address, and telephone number of person reporting.
 - b. Name, address, and telephone number of person responsible for the discharge or release, if known.
 - c. Date and time of the discharge or release.
 - d. Type or name of substance discharged or released.
 - e. Estimated amount of the discharge or release.
 - f. Location or address of the discharge or release.
 - g. Source and cause of the discharge or release.
 - h. Size and characteristics of area affected by the discharge or release.
 - i. Containment and cleanup actions taken to date.
 - j. Other persons or agencies contacted.
3. A Discharge Report Form shall be submitted for any discharge of petroleum products from an underground or above-ground tank and associated piping at retail outlets or bulk storage facilities. (See **Florida Spill Form**.)

Persons in charge of a vessel or terminal facility should provide notice of a pollutant discharge that enters or threatens to enter waters of the state. Provide notice within 1 hour to:

National Response Center**(800) 424-8802****Florida Warning Point Number****(850) 413-9911 (24-hour)****(800) 320-0519 (24-hour)****(850) 413-9900 (Non-emergencies)**

Provide information on:

1. Name, occupation, title and telephone number of person making notification.
2. Type of pollutant spilled.
3. Location of spill (nearest city, river, bay, miles, etc.).
4. Type of installation or carrier involved in the spill.
5. Estimated amount of pollutant spilled.
6. Date and time (local) of spill.

7. Persons and agencies already contacted.
8. Size and characteristics of area already affected by the spill.
9. Containment and cleanup efforts to date.
10. Cause of spill if known.
11. Person or firm in charge of source.

Citation: Florida Administrative Code, Title 62, Section 62N-16.022

Owners and operators of a terminal facility may also be subject to a discharge contingency plan, which will be facility-specific and which will identify circumstances under which notification will be required and the state agency to contact.

Citation: Florida Administrative Code, Title 62, Section 62N-16.033

Report all spills or leakage of oil, gas, other petroleum products, or waste material to:

Florida Department of Environmental Protection
Florida Geological Survey
(850) 488-4191

6.0 SARA Title III

Report releases and submit written follow-up emergency notice(s) to:

Florida Emergency Response Commission
Secretary, Florida Department of Community Affairs
2555 Shumard Oak Boulevard
Tallahassee, FL 32399
(850) 413-9970 (Information only)
(850) 413-9911 (24-hour, In-state, Emergencies)

7.0 Tank Leaks

Using the Incident Notification Form, report within 24 hours (see **Florida Tank Incident Form**):

1. A failed or inconclusive Statistical Inventory Reconciliation, or a failed or inconclusive tightness, pressure, or breach of integrity test.
2. Internal inspection results, including perforations, corrosion holes, weld failures, or other similar defects, that indicate a release could have occurred.
3. Unusual operating conditions, such as erratic behavior of product dispensing equipment, the sudden loss of product from a storage tank system, or any unexplained presence of water in a tank or unexplained presence of water with or without sheen in a piping sump, unless system equipment is found defective but not leaking.
4. The presence of odors of a regulated substance from surface water or groundwater, soil, basements, sewer and utility lines at a facility, or in the surrounding area from which it could be reasonably concluded that a release or discharge may have occurred.
5. The loss of a regulated substance from a storage tank system exceeding 100 gallons on impervious surfaces, other than secondary containment, such as driveways, airport runways, or other similar asphalt or concrete surfaces, provided that the loss does not come in contact with pervious surfaces.
6. The loss of a regulated substance exceeding 500 gallons inside a dike field area with secondary containment.
7. A positive response of release detection devices or methods.
8. The presence of free product in a piping sump.
9. For above-ground tanks, any discharge that exceeds 100 pounds of hydrobromic or hydrofluoric acid, 1,000 pounds of sulfuric acid, or 5,000 pounds of hydrochloric or phosphoric acid. Report verbally to the Florida Warning Point Number within 1 working day of discovery.
10. Any release into a secondary containment system of a mineral acid in excess of 110 gallons, or the Reportable Quantity for that substance under CERCLA, whichever is greater. Report to the Department within 3 working days of discovery of the release.

An Incident Notification Form need not be submitted if, within 24 hours of discovery of an incident, or before the close of the County's next business day, the investigation of the incident confirms that a discharge did not occur.

In addition, report releases or suspected releases within 24 hours to:

Florida Warning Point Number
(850) 413-9911 (24-hour)
(800) 320-0519 (24-hour)
(850) 413-9900 (Non-emergencies)

Using the Florida Spill Form, report within 24 hours (see **Florida Spill Form**):

1. Results of analytical or field tests of surface water or groundwater or soils indicating the presence of contamination by:
 - a. A hazardous substance from a UST system.
 - b. A regulated substance, other than petroleum products.
 - c. Petroleum products chemicals of concern identified by the state Department of Environmental Protection.
2. Free product or sheen of a regulated substance, or a regulated substance that is visibly observed in soil, on surface water, in groundwater samples, on basement floors, in subsurface utility conduits or vaults, or in sewer lines at the facility or in surrounding areas.
3. A spill or overfill event of a regulated substance to soil or another pervious surface, equal to or exceeding 25 gallons, unless the regulated substance has a more stringent reporting requirement specified in the Reportable Quantities listing.
4. Soils stained by regulated substances observed during a closure assessment performed under DEP rules.

Citation: Florida Administrative Code, Title 62, Sections 62-761.450, 62-762.451, 62-762.891(6)

8.0 Wastewater Excursions

Report excursions to:

Florida Warning Point Number

(850) 413-9911 (24-hour)

(800) 320-0519 (24-hour)

(850) 413-9900 (Non-emergencies)

Notes:

1. Any noncompliances which may endanger health or the environment, along with unauthorized spills of treated or untreated wastewater that are in excess of 1,000 gallons per incident, shall be reported orally as soon as possible but no later than 24 hours from the time of becoming aware of the circumstances. The following information should be included in the report:
 - a. Name, address, and telephone number of person reporting.
 - b. Name, address, and telephone number of permittee or responsible person for the discharge.
 - c. Date and time of the discharge and status of discharge (ongoing or ceased).
 - d. Characteristics of the wastewater spilled or released (untreated or treated, industrial or domestic wastewater).
 - e. Estimated amount of the discharge.
 - f. Location or address of the discharge.
 - g. Source and cause of the discharge.
 - h. Whether the discharge was contained on-site, and cleanup actions taken to date.
 - i. Description of area affected by the discharge, including name of water body affected, if any.
 - j. Other persons or agencies contacted.
2. A written submission shall also be provided within 5 days of becoming aware of the noncompliance. The written submission shall be submitted to the nearest Department of Environmental Protection district office (address available through Warning Point Number) and include the following information:
 - a. A description of the noncompliance and its cause.
 - b. The period of noncompliance, including exact dates and times.
 - c. If the noncompliance has not been corrected, the anticipated time it is expected to continue.
 - d. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
3. The following incidents are included as types to be reported within 24 hours:
 - a. Any unanticipated bypass that causes any reclaimed water or the effluent to exceed any permit limitation or results in an unpermitted discharge.
 - b. Any upset that causes any reclaimed water or the effluent to exceed any limitation in the permit.
 - c. Violation of a maximum daily discharge limitation for any of the pollutants specifically listed in the permit for such notice.
 - d. Any unauthorized discharge to surface water or groundwater.

Citation: Florida Administrative Code, Title 62, Sections 62-4.130, 62-4.160(8), 62-620.610(20)

In addition, immediately report any routine or frequent release that poses a hazard or that involves a toxic pollutant, not covered in a permit, above the highest of the following levels:

1. One hundred micrograms per liter (100 mg/l).
2. Two hundred micrograms per liter (200 mg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 mg/l) for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 milligram per liter (1 mg/l) for antimony.
3. Five times the maximum concentration value reported for that pollutant in the discharge permit application.

Also, facility owners/operators must report any nonroutine or infrequent release that poses a hazard or that involves a toxic pollutant, not covered in a permit, above the highest of the following levels:

1. Five hundred micrograms per liter (500 mg/l).
2. One milligram per liter (1 mg/l) for antimony.
3. Ten times the maximum concentration value reported for that pollutant in the discharge permit application.

Citation: Florida Administrative Code, Title 62, Section 62-620.625

9.0 Internet Resources

Agency

Department of Environmental Protection
Emergency Response Commission
State Warning Point

Internet Address

www.dep.state.fl.us
www.floridadisaster.org/cps/SERC/serc.htm
www.floridadisaster.org/bpr/Response/Operations/swp.htm



Discharge Report Form

PLEASE PRINT OR TYPE

DEP Form # <u>62-761.900(1)</u>
Form Title <u>Discharge Report Form</u>
Effective Date: <u>July 13, 1998</u>

Instructions are on the reverse side. Please complete all **applicable** blanks

1. Facility ID Number (if registered): _____ 2. Date of form completion: _____

3. General information

Facility name or responsible party (if applicable): _____
 Facility Owner or Operator, or Discharger: _____
 Contact Person: _____ Telephone Number: () _____ County: _____
 Facility or Discharger Mailing Address: _____
 Location of Discharge (street address): _____
 Latitude and Longitude of Discharge (if known) _____

4. Date of receipt of test results or discovery of confirmed discharge: _____ month/day/year
 5. Estimated number of gallons discharged: _____

6. Discharge affected: Air Soil Groundwater Drinking water well(s) Shoreline Surface water (water body name) _____

7. Method of discovery (check all that apply)

- Liquid detector (automatic or manual)
- Vapor detector (automatic or manual)
- Tightness test
- Pressure test
- Statistical Inventory Reconciliation
- Internal inspection
- Inventory control
- Monitoring wells
- Automatic tank gauging
- Manual tank gauging
- Closure/Closure Assessment
- Groundwater analytical samples
- Soil analytical tests or samples
- Visual observation
- Other _____

8. Type of regulated substance discharged: (check one)

- Unknown
- Gasoline
- Hazardous substance - includes CERCLA substances from USTs above reportable quantities, pesticides, ammonia, chlorine, and derivatives (write in name or Chemical Abstract Service (CAS) number) _____
- Other _____
- Used/waste oil
- Aviation gas
- Jet fuel
- Diesel
- Heating oil
- Kerosene
- New/lube oil
- Mineral acid

9. Source of Discharge: (check all that apply)

- Dispensing system
- Tank
- Unknown
- Other _____
- Pipe
- Fitting
- Valve failure
- Barge
- Tanker ship
- Other Vessel
- Pipeline
- Railroad tankcar
- Tank truck
- Vehicle
- Airplane
- Drum

10. Cause of the discharge: (check all that apply)

- Loose connection
- Fire/explosion
- Other _____
- Puncture
- Overfill
- Spill
- Human error
- Collision
- Vehicle Accident
- Corrosion
- Installation failure

11. Actions taken in response to the discharge: _____

12. Comments: _____

13. Agencies notified (as applicable):

- State Warning Point 1-800 320-0519
- National Response Center 1-800-424-8802
- Florida Marine Patrol (800) 342-5367
- Fire Department
- DEP (district/person)
- County Tanks Program

14. To the best of my knowledge and belief, all information submitted on this form is true, accurate, and complete.

Printed Name of Owner, Operator or Authorized Representative, or Discharger

Signature of Owner, Operator or Authorized Representative, or Discharger

Oil spills to navigable waters of the United States, and releases of reportable quantities of CERCLA hazardous substances must be reported within one hour to the National Response Center or the Florida Marine Patrol. Reports to the National Response Center of oil spills to navigable waters need not be repeated to any other federal, state, or local agency. Conditions at the site that do not involve spills to navigable waters of the United States, or CERCLA hazardous substances, that pose an immediate threat to human health or the environment, must be immediately reported to the State Warning Point or the Local Fire Department. This form must be submitted for all discharges from facilities with storage tank systems, and at other sites, in accordance with Chapters 62-761 and 62-770, F.A.C. Chapter 62-761 and 62-770, F.A.C., should be consulted for specific reporting requirements.

**State Warning Point
1-800-320-0519**

**National Response Center
1-(800)-424-8802**

**Local Fire Department
(obtain local number)**

This form must be used to report any confirmed discharge, or any one of the following from a storage tank system subject to Chapter 62-761, F.A.C., unless the discharge is from a previously-known and reported discharge:

1. Results of analytical or field tests of surface water, groundwater, or soils indicating the presence of contamination by:
 - a. A hazardous substance from a UST;
 - b. A regulated substance, other than petroleum products; or
 - c. Petroleum products' chemicals of concern specified in Chapter 62-770, F.A.C.;
2. A spill or overflow event of a regulated substance to soil equal to or exceeding 25 gallons, unless the regulated substance has a more stringent reporting requirement specified in CFR Title 40, Part 302;
3. Free product or sheen of a regulated substance present in surface water, groundwater, soils, basements, sewers, and utility lines at the facility or in the surrounding area; or
4. Soils stained by regulated substances observed during a closure assessment performed in accordance with Rule 62-761.800, F.A.C.

A copy of this form must be delivered or faxed to the County within 24 hours of the discovery of a discharge, or before the close of the next business day. It is recommended that the original copy be sent in the mail. If the discharge occurs at a county-owned facility, a copy of the form must be faxed or delivered to the local FDEP District office. A discharge of petroleum or petroleum products from a source other than a regulated storage tank system must be reported within one week of discovery in accordance with Rule 62-770.250, F.A.C.

FDEP District Office Addresses

Northwest District
160 Government Center
Pensacola FL 32501-5794
Phone: (850) 595-8360
Fax: (850) 595-8417

Northeast District
7825 Baymeadows Way
Suite 200B
Jacksonville, FL 32256-7590
Phone: (904) 448-4300

Central District
3319 Maguire Boulevard, Suite 232
Orlando, FL 32803-3767
Phone: (407) 894-7555
Fax: (407) 897-2966

Southwest District
3804 Coconut Palm Drive
Tampa, FL 33619-8218
Phone: (813) 632-7600
Fax: (813) 744-6084

South District
2295 Victoria Avenue, Suite 364
Ft. Myers, FL 33902-2549
Phone: (239) 332-6975
Fax: (239) 332-6969

Southeast District
400 North Congress Avenue
West Palm Beach, FL 33401
Phone: (561) 681-6600



Incident Notification Form

DEP Form # 62-761.900(6)

Form Title Incident Notification Form

Effective Date: July 13, 1998

PLEASE PRINT OR TYPE

Instructions are on the reverse side. Please complete all applicable blanks

1. Facility ID Number (if registered): _____ 2. Date of form completion: _____

3. General information

Facility name: _____
Facility Owner or Operator: _____
Contact Person: _____ Telephone number: () _____ County: _____
Facility mailing address: _____
Location of incident (facility street address): _____
Latitude and Longitude of incident (If known.) _____

4. Date of Discovery of incident: _____ month/day/year

5. Monitoring method that indicates a possible release or an incident: (check all that apply)

- | | | |
|--|---|---|
| <input type="checkbox"/> Liquid detector (automatic or manual) | <input type="checkbox"/> Groundwater samples | <input type="checkbox"/> Closure |
| <input type="checkbox"/> Vapor detector (automatic or manual) | <input type="checkbox"/> Monitoring wells | <input type="checkbox"/> Inventory control |
| <input type="checkbox"/> Tightness test | <input type="checkbox"/> Internal inspection | <input type="checkbox"/> Statistical Inventory Reconciliation |
| <input type="checkbox"/> Pressure test | <input type="checkbox"/> Odors in the vicinity | <input type="checkbox"/> Groundwater analytical samples |
| <input type="checkbox"/> Breach of integrity test | <input type="checkbox"/> Automatic tank gauging | <input type="checkbox"/> Soil analytical tests or samples |
| <input type="checkbox"/> Visual observation | <input type="checkbox"/> Manual tank gauging | <input type="checkbox"/> Other _____ |

6. Type of regulated substance stored in the storage system: (check one)

- | | | |
|--------------------------------------|---|---------------------------------------|
| <input type="checkbox"/> Diesel | <input type="checkbox"/> Used/waste oil | <input type="checkbox"/> New/lube oil |
| <input type="checkbox"/> Gasoline | <input type="checkbox"/> Aviation gas | <input type="checkbox"/> Kerosene |
| <input type="checkbox"/> Heating oil | <input type="checkbox"/> Jet fuel | <input type="checkbox"/> Other _____ |
- Hazardous substance - includes CERCLA substances, pesticides, ammonia, chlorine, and their derivatives, and mineral acids.
(write in name or Chemical Abstract Service (CAS) number) _____

7. Incident involves or originated from a: (check all that apply)

- | | | | | |
|---|---|--|--------------------------------|---|
| <input type="checkbox"/> Tank | <input type="checkbox"/> Unusual operating conditions | <input type="checkbox"/> Dispensing equipment | <input type="checkbox"/> Pipe | <input type="checkbox"/> Overfill protection device |
| <input type="checkbox"/> Piping sump | <input type="checkbox"/> Release detection equipment | <input type="checkbox"/> Secondary containment system | <input type="checkbox"/> Other | <input type="checkbox"/> Dispenser Liners |
| <input type="checkbox"/> Loss of >100 gallons to an impervious surface other than secondary containment | | <input type="checkbox"/> Loss of >500 gallons within secondary containment | | |

8. Cause of the incident, if known: (check all that apply)

- | | | | |
|---|--|---|--------------------------------------|
| <input type="checkbox"/> Overfill (<25 gallons) | <input type="checkbox"/> Spill (<25 gallons) | <input type="checkbox"/> Theft | <input type="checkbox"/> Corrosion |
| <input type="checkbox"/> Faulty Probe or sensor | <input type="checkbox"/> Human error | <input type="checkbox"/> Installation failure | <input type="checkbox"/> Other _____ |

9. Actions taken in response to the incident: _____

10. Comments: _____

11. Agencies notified (as applicable):

- | | | |
|---|--|--|
| <input type="checkbox"/> Fire Department. | <input type="checkbox"/> Local Program | <input type="checkbox"/> DEP (district/person) |
|---|--|--|

12. To the best of my knowledge and belief, all information submitted on this form is true, accurate, and complete.

Printed Name of Owner, Operator or Authorized Representative

Signature of Owner, Operator or Authorized Representative.

Instructions for completing the Incident Notification Form

This form must be completed to notify the County of all incidents, or of the following suspected releases:

1. A failed or inconclusive tightness, pressure, or breach of integrity test;
2. Internal inspection results, including perforations, corrosion holes, weld failures, or other similar defects that indicate that a release has occurred;
3. Unusual operating conditions such as the erratic behavior of product dispensing equipment, the sudden loss of product from the storage tank system, or any unexplained presence of water in the tank, unless system equipment is found to be defective but not leaking;
4. Odors of a regulated substance in surface or groundwater, soils, basements, sewers and utility lines at the facility or in the surrounding area;
5. The loss of a regulated substance from a storage tank system exceeding 100 gallons on impervious surfaces other than secondary containment, driveways, airport runways, or other similar asphalt or concrete surfaces;
6. The loss of a regulated substance exceeding 500 gallons inside a dike field area with secondary containment; and
7. A positive response of release detection devices or methods described in Rule 62-761.610, F.A.C., or approved under Rule 62-761.850, F.A.C. A positive response shall be the indication of a release of regulated substances, an exceedance of the Release Detection Response Level or a breach of integrity of a storage tank system.

If the investigation of an incident indicates that a discharge did not occur (for example, the investigation shows that the situation was the result of a theft or a malfunctioning electronic release detection probe), then a letter of retraction should be sent to the County within fourteen days with documentation that verifies that a discharge did not occur. If within 24 hours of an incident, or before the close of the County's next business day, the investigation of the incident does not confirm that a discharge has occurred, an Incident Report Form need not be submitted.

A copy of this form must be delivered or faxed to the County within 24 hours of the discovery of an incident, or before the close of the next business day. It is recommended that the original copy be sent in the mail. If the incident occurs at a county-owned facility, a copy of the form must be faxed or delivered to the local DEP District office.

FDEP District Office Addresses

Northwest District
160 Government Center
Pensacola FL 32501-5794
Phone: (850) 595-8360
Fax: (850) 595-8417

Northeast District
7825 Baymeadows Way
Suite 200B
Jacksonville, FL 32256-7590
Phone: (904) 448-4300

Central District
3319 Maguire Boulevard, Suite 232
Orlando, FL 32803-3767
Phone: (407) 894-7555
Fax: (407) 897-2966

Southwest District
3804 Coconut Palm Drive
Tampa, FL 33619-8218
Phone: (813) 632-7600
Fax: (813) 744-6084

South District
2295 Victoria Avenue, Suite 364
Ft. Myers, FL 33902-2549
Phone: (239) 332-6975
Fax: (239) 332-6969

Southeast District
400 North Congress Avenue
West Palm Beach, FL 33401
Phone: (561) 681-6600