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DRAFT WORK PLAN DEMOLITION AND SOIL REMOVAL ACTION OF SABINO HILL RAKE  
STATION NUMBER 1 NAS BRUNSWICK ME ( DRAFT ACTING AS FINAL VERSION)  
03/01/2010  
AGVIQ/ CH2M HILL

**Draft Work Plan**  
**Demolition and Soil Removal Action of**  
**Sabino Hill Rake Station No. 1**

**Phippsburg, Maine**

**Revision No. 00**

**Contract No. N62470-08-D-1006**  
**Task Order No. WE01**

Submitted to:



**Department of the Navy**  
**U.S. Naval Facilities Engineering Command**  
**Mid-Atlantic Division**

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March 2010

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March 2010

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**Appendices**

A Health and Safety Plan  
B Quality Control Attachments

# Acronyms and Abbreviations

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%R	percent recoveries
ACM	Asbestos Containing Materials
AGVIQ-CH2M HILL	AGVIQ-CH2M HILL Constructors, Inc. Joint Venture
AHA	activity hazard analysis
BBLP	Behavior Based Loss Prevention
BEC	Base Environmental Coordinator
BRAC	Base Realignment and Closure
C&D	construction and demolition
CFR	Code of Federal Regulations
CO	Contracting Officer
COTR	Contracting Officer Technical Representative
DEP	Department of Environmental Protection
DFOW	definable feature of work
DoD	Department of Defense
DOT	Department of Transportation
ECP	Environmental Condition of Property
EDD	electronic data deliverable
EGAD	Environmental and Geographic Analysis Database
EPA	U.S. Environmental Protection Agency
HAZWOPER	Hazardous Waste Operations and Emergency Response
HETL	Health and Environmental Testing Laboratory
HSP	Health and Safety Plan
LBP	lead-based paint
LDR	Land Disposal Restriction
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MS/MSD	matrix spike/matrix spike duplicate
NAS	Naval Air Station
NAVFAC MIDLANT	Naval Facilities Engineering Command, Mid-Atlantic
NESHAP	National Emission Standard for Hazardous Air Pollutants
NIRIS	Naval Installation Restoration Information Solution
NPL	National Priorities List
NRC	National Response Center
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl
PEL	permissible exposure limit
PMO	Program Management Office
PPE	personal protective equipment
ppm	parts per million
QA	quality assurance
QC	quality control
RACR	Remedial Action Completion Report

ROICC	Resident Officer in Charge of Construction
RPD	relative percent difference
RPM	Remedial Project Manager
SAP	Sampling and Analysis Plan
TAT	turnaround time
TCLP	Toxicity Characteristic Leaching Procedure
TO	Task Order
TSCA	Toxic Substance Control Act
USACE	U.S. Army Corps of Engineers

# 1.0 Introduction

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AGVIQ-CH2M HILL Constructors, Inc. Joint Venture (AGVIQ-CH2M HILL) has been contracted by the Naval Facilities Engineering Command, Mid-Atlantic (NAVFAC MIDLANT) to prepare this Work Plan under Response Action Contract No. N62472-08-D-0006, Task Order (TO) No. WE01. The purpose of this Work Plan is to outline the procedures for the demolition of the Sabino Hill Rake Station No. 1 located at Popham Beach State Park (10 Perkins Farm Lane, Phippsburg, Maine) and soil removal action around the tower.

This Work Plan is organized into the following seven sections and two appendices:

**Section 1.0 Introduction** includes the site description and project objectives.

**Section 2.0 Project Execution Plan** details the required scope of work, project schedule, communications plan, and traffic control plan.

**Section 3.0 Sampling and Analysis Plan (SAP)** provides sample locations, sampling frequency, and the required laboratory analyses for samples collected after soil excavation activities. Procedures outlining sample collection, sample handling, labeling, and required quality assurance (QA) and quality control (QC) samples are included in the SAP.

**Section 4.0 Environmental Protection Plan** contains general procedures that will be implemented to prevent pollution and protect the environment. The purpose of this plan is to provide specific requirements/procedures to protect the environment during the Sabino Hill Rake Station No. 1 remediation activities.

**Section 5.0 Waste Management Plan** provides specific requirements and procedures to manage and dispose of wastes generated during the performance of the specified remediation activities at the Sabino Hill Rake Station No. 1.

**Section 6.0 Quality Control Plan** includes the definable features of work and quality control procedures for work described in this Work Plan. The site-specific project organization for this task order is also included in this section. This section also includes information on the quality administrators for the work to be completed at the Sabino Hill Rake Station No. 1.

**Section 7.0 References** includes references to documents used to prepare this Work Plan.

**Appendix A** contains the complete site-specific Health and Safety Plan (HSP), which addresses project-specific health and safety issues for demolition of the Sabino Hill Rake Station No. 1 and the soil excavation activities around the tower.

**Appendix B** contains the QC attachments (templates such as submittal register, testing plan and log, waste management log, daily reports, meeting minutes, etc.).

## 1.1 Site Description and History

The Sabino Hill Rake Station No. 1 (identified as Structure 558) is located approximately 14 miles southeast of the Naval Air Station (NAS) Brunswick Main Base, in Phippsburg, Maine (Figures 1-1 and 1-2). The property is not part of the NAS Brunswick National Priorities List (NPL) site. According to Town of Phippsburg property records, the rake tower is identified as Tax Map 16, Lot No. 32 (Figure 1-3). In 1959, the Navy acquired this 0.23-acre property and built the rake tower. The rake tower was used by the Navy to observe and score the success of aircraft training missions performed off the coast.

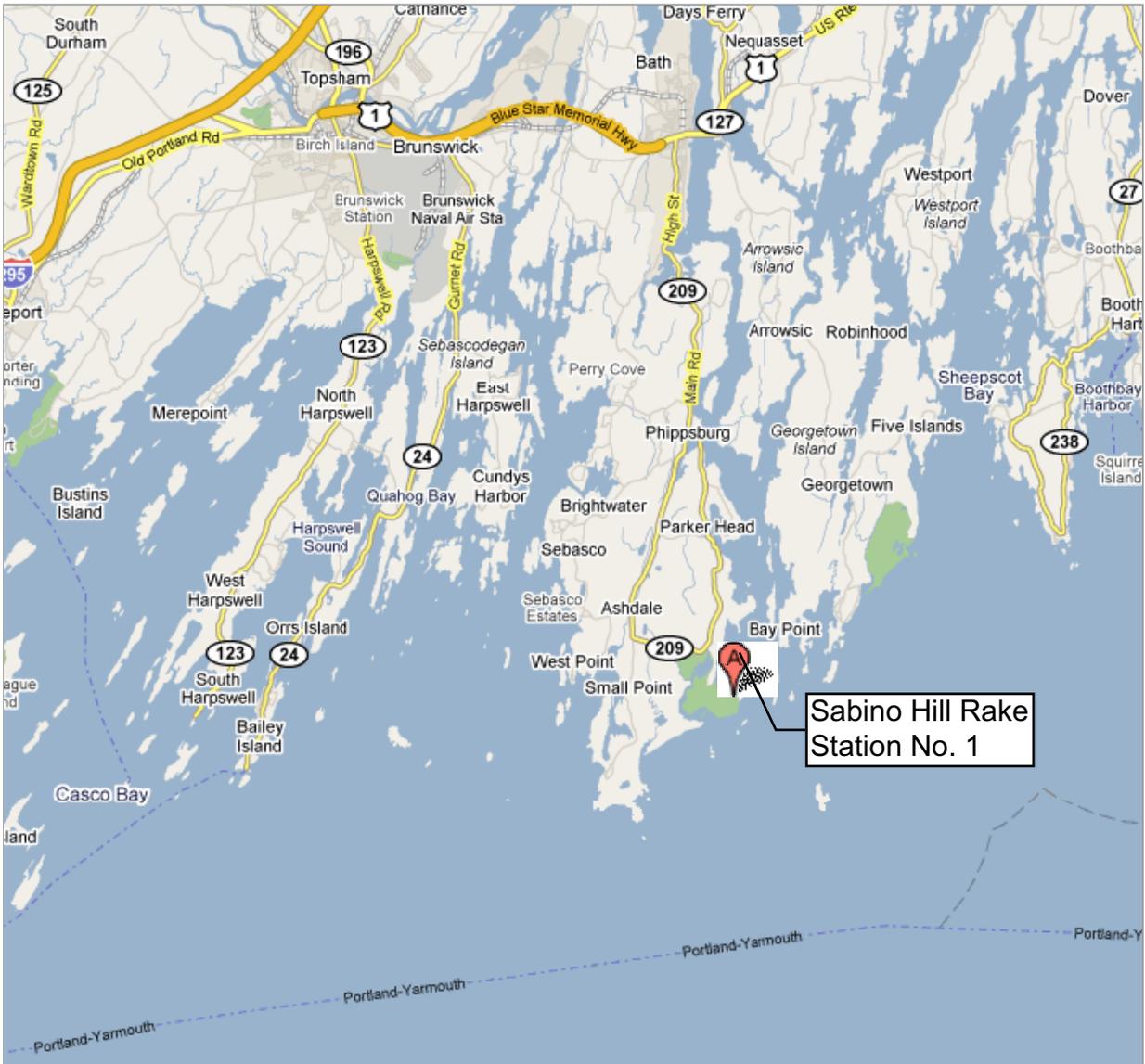
Currently, the 55-foot tall tower site is surrounded by trees and brush, several private residences, a storage building for the Popham Beach State Park, and the Park office. The tower is constructed of steel and sits on four concrete pilings; the base of the tower is approximately 14 feet by 14 feet. The tower site is surrounded with a 6-foot metal cyclone fence. The concrete piling bases are approximately 16 inches square, and it is not known how deep the bases go into the ground. A metal ladder leading to the top of the tower is located on the north side of the tower and is enclosed with a fiberglass covering. At the top of the tower is a metal-framed observation building measuring approximately 11 feet by 11 feet and a metal grated walkway around this building approximately 3 feet wide with a hand railing. The electric power to the tower site is still active.

According to Environmental Condition of Property (ECP) Report (Base Realignment and Closure Commission [BRAC] Program Management Office [PMO], 2006), the rake tower is identified as having no known asbestos containing material (ACM) since the roof and tile have been abated. The existing steel structure contains peeling paint with levels of lead up to 60,000 milligrams per kilogram (mg/kg). The soil beneath and around the tower is believed to contain paint chips.

In May 2006, the Navy collected one soil sample and analyzed it for total lead, Toxicity Characteristic Leaching Procedure (TCLP) lead, and polychlorinated biphenyls (PCBs). Additionally, in June of 2006, the Navy collected an additional soil sample south of the tower and analyzed it for total lead and PCBs. These samples indicated that the total lead concentration in soil was 500 mg/kg, while the lead concentration in paint samples was 60,000 mg/kg. PCBs in the soil and the paint were less than 0.8 mg/kg, which is below the 50 mg/kg regulatory limit requiring management and disposal under the requirements of the Toxic Substance Control Act (TSCA). Additionally, TCLP lead in soil was 2.2 milligrams per liter (mg/L), which is below the regulatory limit of 5 mg/L.

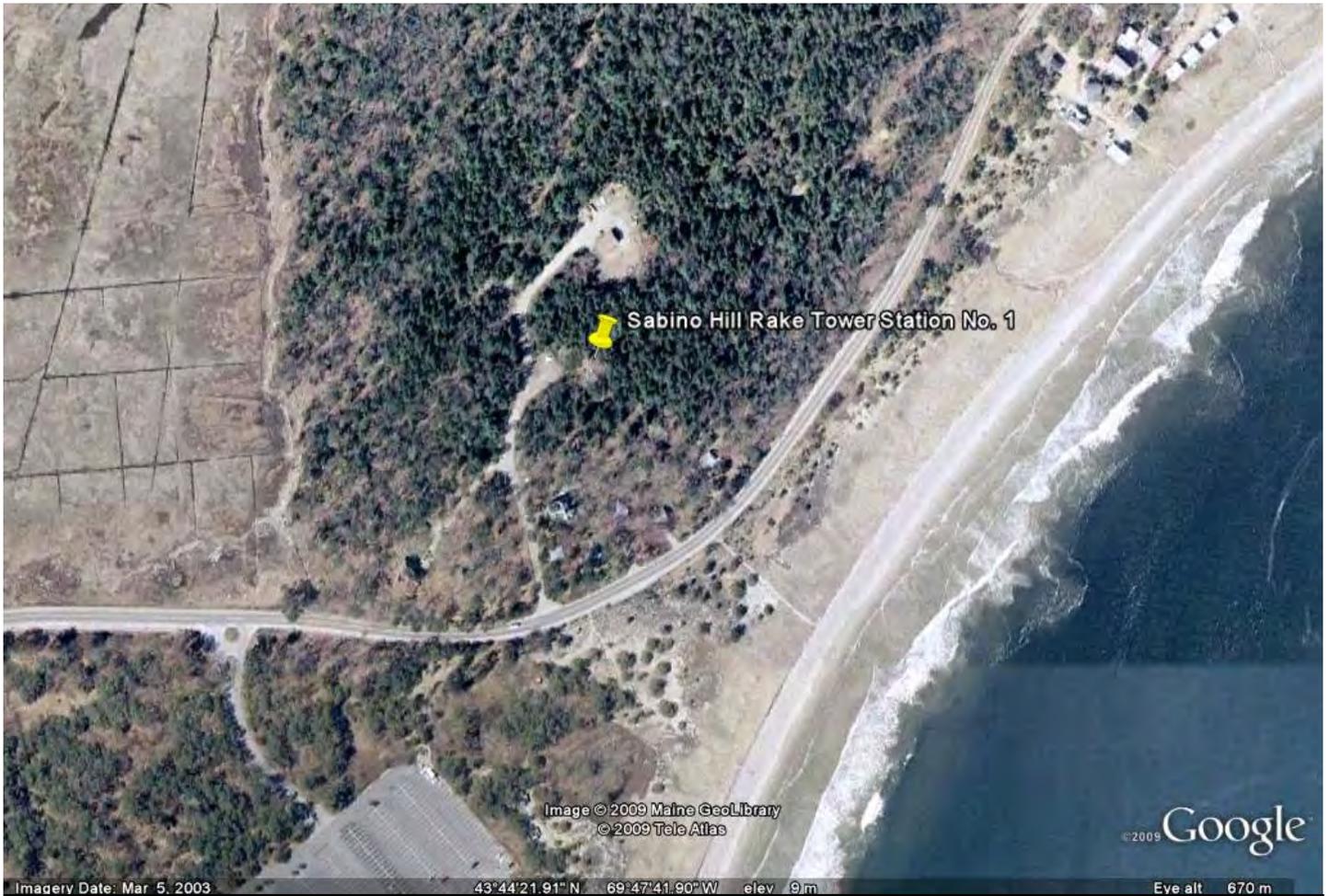
In May 2007, the Navy collected soil samples from four locations inside the fence midpoint of each tower side at depths of 0 to 4 inches and 4 to 12 inches. A paint chip composite sample was taken from soil and tower surfaces inside the fence and these samples were analyzed for lead and PCBs. The levels of lead detected ranged from 8.2 to 58,000 mg/kg. The PCB concentrations were less than 0.033 mg/kg for each PCB, except Aroclor-1254, which was detected at 0.4 mg/kg in the paint chip composite sample.

In October 2009, AGVIQ-CH2M HILL conducted environmental surveys, which included asbestos, lead-based paint (LBP), PCB-containing material/equipment and universal waste surveys (AGVIQ-CH2M HILL, 2009). Results of this survey completed by Abatement Professionals, Inc. are summarized below.

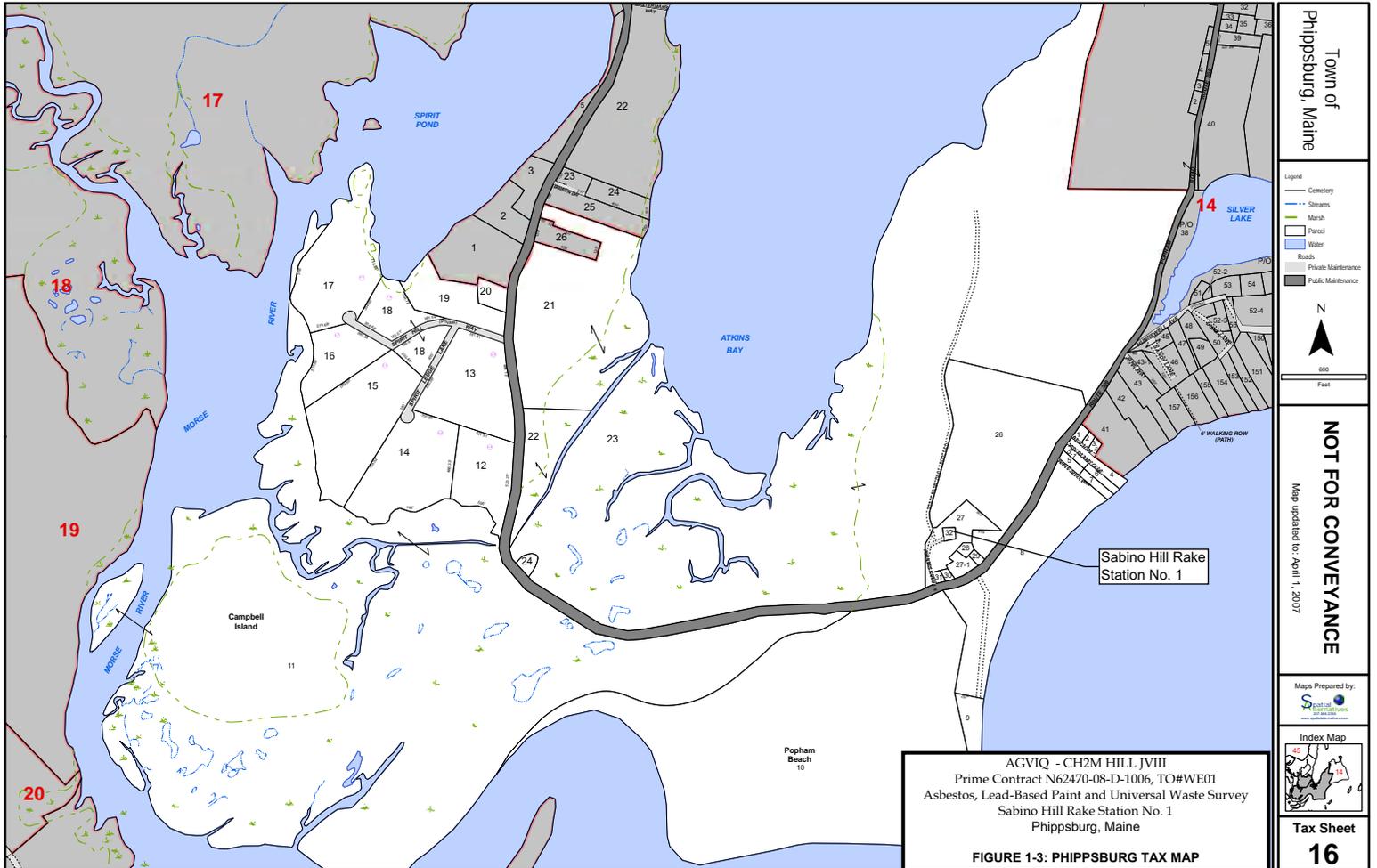


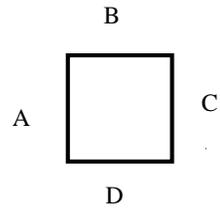
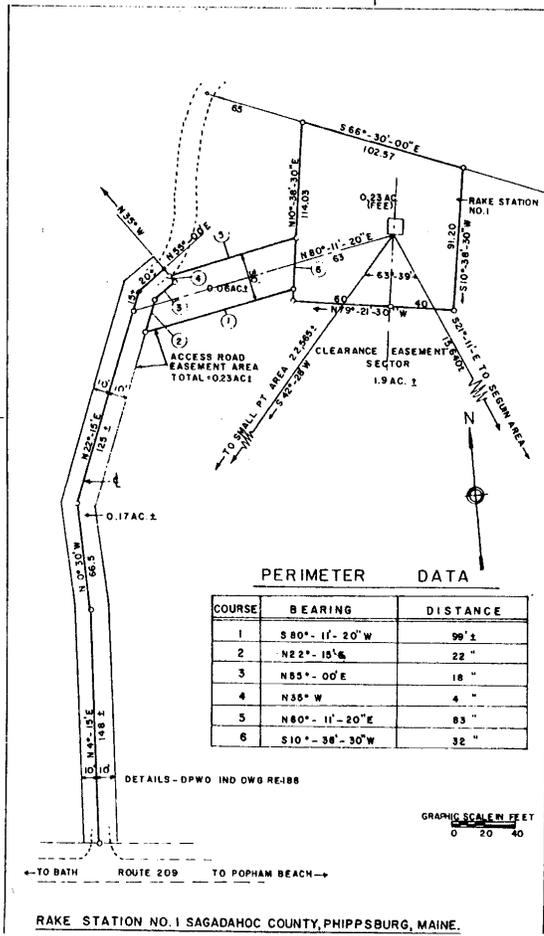
©2009 Google - Map data ©2009 Tele Atlas -

	<p>AGVIQ - CH2M HILL JVIII          Prime Contract N62470-08-D-1006, TO#WE01          Asbestos, Lead-Based Paint and Universal Waste Survey          Sabino Hill Rake Station No. 1          Phippsburg, Maine  <b>FIGURE 1-1: SITE VICINITY MAP</b></p>
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AGVIQ - CH2M HILL JVIII  
Prime Contract N62470-08-D-1006, TO#WE01  
Asbestos, Lead-Based Paint and Universal Waste Survey  
Sabino Hill Rake Station No. 1  
Phippsburg, Maine  
**FIGURE 1-2: SITE LOCATION MAP**





AGVIQ - CH2M HILL JVIII  
 Prime Contract N62470-08-D-1006, TO#WE01  
 Sabino Hill Rake Station No. 1  
 Phippsburg, Maine

**FIGURE 1-4: PROPERTY SURVEY MAP**

**Asbestos:** Five locations (three caulking and two floor tiles) suspected to contain asbestos were sampled and tested for asbestos. Only one of these samples (i.e., the caulking between metal panels) indicated Chrysolite at 3 percent while the other four samples detected no asbestos. There is approximately 375 linear feet of asbestos caulking between the metal panels. Additional caulking material may be found between the panels after the roofing material has been removed. The report indicates that Maine Department of Environmental Protection (DEP) doesn't regulate caulking agents during demolition activities (since they are not friable); however, it is a health and safety concern for the workers and must be taken in to consideration during demolition.

**PCBs and Universal Wastes:** There are no PCB ballasts. Four flood light bulbs must be removed and properly disposed of prior to tower demolition. One Honeywell thermostat (red in color) is located inside the observation tower; this device will be removed and if it contains a mercury ampule, the thermostat will be managed and disposed as mercury-containing universal waste prior to tower demolition. There is also one timer switch located on the wall; this item will also be checked for any potential mercury materials and properly disposed of prior to tower demolition.

**Lead Tests:** The LBP testing on both the tower and tower supports indicated that lead was present on most of the structural steel components. A visual assessment of the condition of the paint was performed and most was found to be in poor condition. Components such as the perimeter fencing, metal floor grates, and interior items found within the tower (chairs, tables, furnace system, etc.) were found to be non-lead containing and can be removed prior to the demolition process. All remaining structural steel components will require removal with safety precautions. Steel components with residual LBP will be recycled, and therefore not subject to the hazardous waste requirements when removed. However, any LBP chips and debris will be managed and disposed as hazardous waste.

**Soil Sampling:** Soil sampling was performed at specified distances from the perimeter fencing around the tower. Two samples, one at a 5-foot distance and another at a 15-foot distance from the fence, were collected from each side of the tower (identified as A, B, C, and D as shown on Figure 1-4). These soil samples included the top four inches of soil at every sampling point and were analyzed for total lead at Maine Health and Environmental Testing Laboratory (HETL). As indicated on the laboratory report, soil sample results for total lead ranged between 13 mg/kg and 380 mg/kg.

## 1.2 Project Objectives

The project objectives of this remediation effort are as follows: 1) to implement a safe and controlled demolition of the Sabino Hill Rake Tower structure; 2) to excavate LBP-impacted soil around the tower site so that the residual lead concentrations in soil is below 340 parts per million (ppm) per Maine Remedial Action Guidelines for Soil Contaminated with Hazardous Substances, January 13, 2010; and 3) to restore the site to an acceptable condition similar to the surrounding area so the property could be transferred to the Maine Bureau of Parks and Lands (Popham Beach State Park).

## 1.3 Regulatory Framework

Overall remedial activities at the Sabino Hill Rake Tower Site will be performed to comply with BRAC law.

The removal, transportation, and disposal of asbestos will be conducted in accordance with applicable rules and regulations under; 40 Code of Federal Regulations (CFR) 61 subpart M, National Emission Standards for Hazardous Air Pollutants (NESHAPs); 29 CFR 1926.1101 Occupational Safety and Health Administration (OSHA) Occupational Exposure to Asbestos, Construction; and State of Maine regulations including Maine DEP, Chapter 425, Asbestos Management Regulation.

Lead abatement and management of lead-contaminated soil will be conducted in accordance with OSHA Lead in Construction Standard 29 CFR 1926.62 and procedures described in Maine DEP, Chapter 424, Lead Management Regulation.

Environmental media samples for lead analyses will be performed in accordance with the Maine Department of Human Services Chapter 263, Maine Comprehensive and Limited Environmental Laboratory Certification Rules.

The universal wastes will be managed in accordance with regulations are set forth in 40 CFR Part 273 and Maine DEP – Chapter 850, Section 3A, Universal Waste Rule, and Maine Revised Statutes – Title 38, Chapter 16-B (Mercury Added Products and Services).

Employee training requirements for removal/demolition work include: personnel trained in accordance with OSHA Lead in Construction and OSHA Asbestos in Construction. Additionally, a Maine Licensed Lead Abatement Contractor will perform the lead abatement and a Design Consultant and Project Supervisor will be involved in the soil remediation.

# 2.0 Project Execution Plan

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The scope of work, project schedule, communication plan, and traffic control plan are briefly described in this section.

## 2.1 Scope of Work

The work activities associated with the Sabino Hill Rake Station No. 1 removal action are as follows and summarized in the following sections:

- Mobilization and Site Preparation
- Electrical Service Disconnection
- ACM and Universal Waste Abatement
- Demolition of Tower
- Excavation of Contaminated Soil
- Confirmation Sample Collection
- Backfill and Site Restoration
- Waste Management
- Demobilization
- Remedial Action Completion Report Submittal

### 2.1.1 Mobilization and Site Preparation

Mobilization will commence following receipt of a Notice to Proceed from Public Works Department, NAS Brunswick, Resident Officer In-Charge of Construction (ROICC). Mobilization activities will include transporting to the site the personnel, equipment, materials, instruments, and other services required to implement the remedial action. AGVIQ-CH2M HILL will use the area outside the tower site (on the west side by the existing transformer) as the staging area for the duration of the field work. Portable sanitary facilities will be mobilized to the site for use by the field personnel. Field personnel will use cell phones as a means of communication.

A pre-construction meeting will be held during the initial project mobilization to discuss the project schedule and activities to be performed during the work, conduct initial task coordination with site personnel, and introduce personnel who will be working on the project. A personnel roster of all field personnel, all Navy contacts, regulatory contacts, and adjacent tenants will be prepared and distributed at the pre-construction meeting.

Prior to the commencement of work at the site, temporary erosion and sediment controls will be installed to minimize the environmental impacts as specified in Section 4.0, Environmental Protection Plan.

AGVIQ-CH2M HILL will construct a decontamination pad in an appropriate location outside the work zones to decontaminate workers and equipment exposed to contaminated media. Decontamination activities will be required for all equipment before the initiation of work and at the completion of the work. AGVIQ-CH2M HILL will direct any subcontractors

working onsite to conduct decontamination of equipment, as appropriate. An exclusion zone (demolition and excavation area) will be established and maintained for the safety of the public; access will be limited to site personnel only.

AGVIQ-CH2M HILL will ensure that equipment to be operated on the access road and public roads will be free of contaminated material and decontamination measures will be adequate to ensure that material will not be deposited on the roads.

### **2.1.2 Electrical Service Disconnection**

AGVIQ-CH2M HILL will coordinate with the local electric service company and permanently disconnect the electrical service to the tower site. A licensed electrician will be used to verify that all electrical service has been disconnected from the tower site. This task will be completed without disruption of service to nearby residences. All utility appurtenances removed will be disposed of or recycled as part of the demolition services.

### **2.1.3 ACM and Universal Waste Abatement**

AGVIQ-CH2M HILL's subcontractor will abate all identified ACM and universal wastes (Refer to Section 1.1 for details of items determined to be present) prior to demolition activities. The removal, transportation, and disposal will be conducted in accordance with applicable rules and regulations under 40 CFR 61 subpart M, NESHAPs; 29 CFR 1926.1101 OSHA Occupational Exposure to Asbestos, Construction; and the State of Maine regulations including Maine DEP - Chapter 425, Asbestos Management Regulation; Maine DEP - Chapter 850, Section 3A, Universal Waste Rule; and Maine Revised Statutes - Title 38, Chapter 16-B (Mercury Added Products and Services).

### **2.1.4 Demolition of Tower**

#### **General Requirements**

Remain a safe distance from the demolition zone to reduce potential of exposure to fragmentation of glass, steel, masonry, and other debris during demolition operations. The demolition zone will be demarcated with caution tape, flagging, or some other means, and will include the footprint of the tower as well as the surrounding perimeter within a 20-foot distance from the building. Security will be maintained by the onsite health and safety officer in and out of the demolition area.

Do not enter the demolition zone unless completely necessary and only after the designated competent person has assessed the condition of the structure/ongoing demolition operations and has authorized entry.

Conduct daily safety briefing/meetings and a task specific activity hazard analysis (AHA) with all site demolition personnel to discuss the work planned for the day and the Health and Safety requirements to be followed. The requirements of the Behavior Based Loss Prevention (BBLP) Program detailed in the HSP will be implemented.

#### **Site-Specific Requirements**

Generation of airborne lead dust and friable asbestos is of concern during demolition; therefore, safety measures such as the use of engineering controls are essential in order to

protect human health and the environment. All work operations will be performed in accordance with 29 CFR Part 1926.62; 29 CFR 1926.1101; and Maine DEP - Chapter 424, Lead Management Regulation, and Chapter 425, Asbestos Management Regulation.

Appropriate precautions will be taken to avoid damage to adjacent properties and surrounding trees. Explosives will not be used for demolition activities due to the presence of other properties nearby. During demolition, the condition of the structure will be continuously evaluated and appropriate action will be taken to protect all personnel working in and around the demolition site.

Gross decontamination and/or selective abatement of steel frame members will be focused on reduction and/or elimination of lead-based paint contamination to ensure safe demolition of steel members and to meet offsite disposal requirements for construction and demolition (C&D) waste. To the extent practical, steel and other recyclable debris will be segregated during demolition.

Prior to demolition, polyethylene sheeting or other protective cover will be installed on the ground surface around the 20-foot radius to collect the lead-based paint chips during demolition and to prevent them from getting in to the soil. Demolition of the tower will be performed in three stages as follows:

- Stage 1: Deconstruct top 12 feet of structure (which mainly includes the observation building) using a crane with appropriate rigging or similar material handling equipment to hold the upper structure while it is cut using a hydraulic shear mounted on an excavator or other suitable equipment, then lowered to the ground in a controlled manner.
- Stage 2: Deconstruct bottom 40 feet of structure using a hydraulic shear mounted on an excavator or other suitable equipment, assisted with another material handling equipment to hold the structural component before lowering the components to the ground in a controlled manner.
- Stage 3: Remove all concrete piers using an excavator or other suitable equipment, containerize concrete rubble, and dispose offsite for recycling.

Since the ACM is in the caulking between the metal panels of the observation building, once the building is lowered to the ground, the ACM will be removed prior to disposal of the metal panels to a recycling facility. Prior to cutting the metal frame structure to free the observation building and sequentially remove other structural components from the tower, the LBP coating on the metal will be adequately stripped before performing cutting operations.

## **2.1.5 Excavation of Contaminated Soil**

Based on the existing soil sample data, it is evident that the top 4 inches of soil are impacted with lead flakes from the tower. Therefore, the top 4 inches of soil within the open area of the 0.23-acre site will be excavated and placed in a roll-off container for characterization and disposal. Waste management of excavated soil will be in accordance with Section 6.0, Waste Management Plan.

### 2.1.6 Confirmation Sample Collection

Once the top 4 inches of soil has been excavated, confirmation soil samples from the bottom of the excavation will be collected and sent to a Navy- and Maine-HETL-approved laboratory for lead analysis. A total of four sidewall samples and two bottom samples will be collected. Additionally, one waste characterization sample will be collected from the roll-off bin and analyzed for TCLP metals and PCBs for disposal purposes. Sampling and analysis of confirmation samples and waste characterization samples will be performed in accordance with Section 3.0, Sampling and Analysis Plan. Collection of samples will be performed by a State of Maine Licensed Lead Inspector, Risk Assessor, or Sampling Technician.

If the confirmation samples indicate that the cleanup goal has not been met (i.e., if the concentration of lead is greater than 340 ppm), then an additional 4 inches of excavation will be performed at those discrete areas (“hot spot” locations) followed by confirmation sampling.

### 2.1.7 Backfill and Site Restoration

Once the area is excavated and ready for backfilling, a nonwoven, geotextile, filter fabric of at least 12 ounces per square yard will be installed to control vegetation growth. The area will be backfilled with aggregate base course gravel meeting the specifications provided below to match the surrounding topography. It is expected that this area will be used for general purpose non-vehicular traffic consistent with the rest of the surrounding areas.

The aggregate base course will be screened or crushed gravel of hard durable particles free from vegetative matter, lumps, or balls of clay and other deleterious substances. The gradation of the part that passes a 2-square-inch mesh sieve will meet the following grading requirements:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieve
0.5-inch	45 to 70%
0.25-inch	30 to 55%
No. 40	0 to 20%
No. 200	0 to 5%

Once the site has been stabilized and accepted by the ROICC, all erosion control measures will be removed. Restoration of cross-contamination of site or public thoroughfare will be completed following field activities. Office wastes and general construction debris generated during field activities will be properly disposed of offsite prior to demobilization.

### 2.1.8 Waste Management

Storage, transportation, and disposal of all generated wastes (C&D debris, recyclable materials, soil, and decontamination water) will be in accordance with Section 6.0, Waste Management Plan.

## 2.1.9 Demobilization

Following site restoration, the following demobilization activities will be conducted:

- Upon completion of final decontamination, any decontamination support features (such as a pad, wash units) will be removed. Any items that cannot be decontaminated and/or materials (such as plastic sheeting) used in decontamination activities will be disposed of along with the soil being disposed of offsite at an appropriate disposal facility.
- A final inspection will be conducted. The NAVFAC MIDLANT Remedial Project Manager (RPM), ROICC, and AGVIQ-CH2M HILL Project Manager will participate in the final inspection to ensure all tasks have been conducted to the satisfaction of the Navy and in accordance with the scope identified in this Work Plan.
- Upon completion of final inspection, all field equipment, temporary facilities, and other miscellaneous items (e.g., temporary containment structures, fences, barricades, caution tapes and signs) resulting from or used during the field operations will be removed.

## 2.1.10 Remedial Action Completion Report

A Remedial Action Completion Report (RACR) will be submitted to NAVFAC MIDLANT 30 days after demobilization to document the activities and will include the following:

- Description of all abatement activities for ACM, LBP, and Universal Wastes
- Summary of demolition activities
- Representative site photographs
- Complete set of all field tests and laboratory analytical results
- All disposal documentation (weight tickets, waste profiles, manifests, land disposal restriction forms, and certificates of disposal/treatment/recycling)

## 2.2 Project Schedule

The goal of the project is to complete the remediation activities during spring 2010. Field work will begin following the approval of this Work Plan. A pre-construction meeting is expected to be conducted in April 19, 2010. The schedule is summarized as follows:

Activity	Start Date	Duration
Mobilization and Site Preparation	04/19/2010	1 day
Tower Demolition Activities	04/19/2010	5 days
Soil Excavation and Sampling	04/26/2010	3 days
Backfill and Site Restoration	04/29/2010	2 day
Post-Construction Inspection	04/30/2010	1 day
Demobilization	04/30/2010	1 day
Draft RACR	05/31/2010	4 weeks after demobilization

The work hours for construction activities are 7:00 AM to 5:00 PM, Monday through Friday, except federal and state holidays. Equipment, supplies, and materials will be received or shipped during the defined work hours.

Extended work hours or different work hours will be coordinated with the ROICC prior to the start of work. Depending on the magnitude of adverse weather and its potential impact

to the project schedule, time lost during the scheduled workweek may be made up on an accelerated schedule (including evenings and weekends).

## 2.3 Communications Plan

A communications matrix outlining the lines of communications for NAVFAC BRAC PMO NE and AGVIQ-CH2M HILL is presented in Table 2-1. Table 2-2 provides a project personnel directory.

**TABLE 2-1**  
Communications Matrix

<b>AGVIQ-CH2M HILL</b>		<b>Navy Direct Report</b>
Sidney Alison, Program Manager		Jean Mann, CO Zane Perry, COTR
Michael Halil, Deputy Program Manager		Zane Perry, COTR
Venky Venkatesh, Project Manager		Todd Bober, RPM, NAVFAC BRAC PMO NE Paul Burgio, BEC, NAVFAC BRAC PMO NE Joe Gallant, ROICC, NAS Brunswick Lisa Joy, Environmental Director, NAS Brunswick
BEC	Base Environmental Coordinator	
CO	Contracting Officer	
COTR	Contracting Officer's Technical Representative	
BRAC PMO NE	Base Realignment and Closure Program Management Office North East	
ROICC	Resident Officer In-Charge of Construction	
RPM	Remedial Project Manager	

**TABLE 2-2**  
Project Personnel Directory

<b>Contact</b>	<b>Company</b>
<b>AGVIQ-CH2M HILL PMO</b>	AGVIQ-CH2M HILL
Sidney Allison, Program Manager	(843) 813-2672
Michael Halil, Deputy Program Manager	(904) 219-6277
Larry Westphal, Contracts Administration Manager	(757) 318-9427
Angelo Liberatore, Health and Safety Manager	(770) 604-9182 Ext. 54210
Theresa Rojas, QA/QC Manager	(770) 604-9182 Ext. 54297
Nancy Ballantyne, Program Environmental Compliance Manager	(303) 885-9954
Venky Venkatesh, Senior Project Manager	CH2M HILL Constructors, Inc. (216) 623.0402 Ext. 41218 (office) (216) 235-8613 (cell)
Todd Bober, RPM	NAVFAC BRAC PMO NE (215) 897-4911
Paul Burgio, BEC	NAVFAC BRAC PMO NE (215) 897-4915
Joe Gallant, ROICC	NAS Brunswick, ROICC (207) 921-2325
Lisa Joy, Environmental Director	NAS Brunswick, Environmental (207) 921-1720
Claudia Sait, Project Manager	Maine DEP (207) 287-7713
Michael Daly, Project Manager	EPA (617) 918-1386

## 2.4 Traffic Control Plan

Traffic control will be the responsibility of the AGVIQ-CH2M HILL Project Superintendent. Disposal vehicles will only arrive and leave the site between the working hours (7:00 AM to 5:00 PM). AGVIQ-CH2M HILL will ensure that all roll-off bins are equipped with appropriate appurtenances (e.g., liners and tarps) in good working condition. AGVIQ-CH2M HILL will ensure that all liners and covers are properly secured, and that the vehicles are not leaking or releasing any waste constituents at any time, from loading at the source site, along the haul route, until off-loading at the approved disposal site.

Drivers of the offsite disposal trucks must not come in physical contact with the contaminated material while covering the load or preparing it for transport. AGVIQ-CH2M HILL will ensure that there is no visible soil/waste material on the sides or tires of any trucks leaving the staging area, or vehicle leaving the site. AGVIQ-CH2M HILL will use proper decontamination procedures to remove soil or debris from the outsides of the vehicles if necessary to ensure soil is not tracked beyond designated work areas onto surrounding roadways.

## 3.0 Sampling and Analysis Plan

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This section describes the sampling and analysis associated with the excavation and disposal of lead-contaminated soil. Samples will be collected in accordance with Maine DEP sampling guidance documents.

Table 3-1 provides the project specific contaminants of concern, analytical methods, remediation goals, QC samples, and anticipated analytical turnaround times (TAT). Katahdin Analytical Services will perform all laboratory analysis for this project.

### 3.1 Sampling Objectives

The project specific target analytes and required methods are defined in Table 3-1 and summarized below:

- Collect confirmation samples from the excavation bottom and sidewalls once the excavation is completed so residual lead concentrations in soil is below 340 ppm (Maine Remedial Action Guidelines for Soil Contaminated with Hazardous Substances, January 13, 2010). A total of four sidewall samples and two bottom samples will be collected and analyzed for total lead.
- Collect one composite sample for every roll-off container of soil requiring offsite disposal to determine acceptability of the material at offsite disposal facilities. The composite sample will be prepared by collecting grab samples within each roll-off container at four discrete locations. The disposal will be based on TCLP lead and PCBs results.

### 3.2 Confirmatory Soil Sampling Procedure

Following excavation of the area, confirmation soil samples will be collected using an unused disposable stainless steel spoons from the bottom and sidewalls of the excavation. Sample locations will be biased to locations that may be impacted based on visual observations.

### 3.3 Waste Characterization and Disposal Sampling

The soil samples for waste characterization will be collected in the following manner and analyzed in accordance with Table 3-1.

1. From four randomly selected sample locations within each roll-off container, collect several scoopfuls of the soil into a stainless steel bowl.
2. Homogenize the four grab samples by the quartering techniques using the spoon.
3. Fill the appropriate sample jars completely full with the homogenized sample.
4. Close the jar, label, and package the sample for shipment to the laboratory.

**TABLE 3-1**  
**Sampling and Analysis Summary**

Sample Task	Sample Point	Matrix	Sampling Frequency	Approx. Number of Samples	Sampling Method	Sampling Equipment	TAT	Data Package Requirement	Required Analysis	Analytical Method	Holding Time	Sample Preservation	Containers
<b>Soil Confirmation Sampling</b>													
Confirmation Soil Samples	Sidewall and Bottom of Excavation	Soil	Once	4 Sidewall + 2 Bottom + 1 Field Duplicates + 1 MS/MSD = 8 TOTAL	Grab from open excavation	Disposable Stainless Steel Spoon	3 days	CH2M HILL Level C	Lead	6010A / 7470	180 days	Cool to 4°C	(1) 4-oz jar
<b>Waste Characterization Sampling for Soil</b>													
Soil Disposal Characterization	From Roll-off Container	Soil	One per Container	2	Composite sample from four discrete locations within the roll-off	Disposable Stainless Steel Spoon	3 days	CH2M HILL Level B	TCLP Metals	1311/ 6010A/ 7470	6-month TCLP extr; 6-month analysis Hg; 28-day TCLP extr; 28-day analysis	Cool to 4°C	(2) 8-oz jar
									PCBs	8082	14 day extr; 40-day analysis	Cool to 4°C	(2) 8-oz jar

### 3.4 Sample Equipment Decontamination

Sampling methods and equipment have been selected to minimize decontamination requirements and the possibility of cross-contamination. The following procedures will be used to decontaminate sampling equipment when appropriate.

Disposable sampling equipment is anticipated to be used during this project. In the event that reusable sampling equipment is used, it will be decontaminated before the initial sample is collected and periodically between sampling locations using the following procedure:

1. Clean with potable water and Alconox® or equivalent laboratory grade detergent using a brush, if necessary, to remove particulate matter and surface films.
2. Rinse thoroughly with potable water.
3. Rinse thoroughly with analyte-free water.
4. Allow equipment to air dry completely.

### 3.5 Field Sample Documentation

Sampling documentation will include the following:

- Numbered Chain-of-Custody Reports
- Sample Log Book that includes the following minimum information:
  - Name of laboratories and contacts to which the samples were sent, TAT requested, and data results, when possible
  - Unusual appearance or odor of a sample
  - Temperature, and weather conditions
  - Additional samples and reasons for obtaining them
  - Levels of personal protection used (with justification)
  - Summary of QC samples obtained
  - Sample collection method, equipment and containers
  - Sketch of sample locations
  - Date and Time of sample collection
  - Description of the sample location
  - Description of the sample, and
  - Sampler(s)' name(s) and company
- Sample Labels
- Custody Seals (minimum of two on each shipping container)

### 3.6 Field Quality Control

Field duplicate samples, trip blanks, and matrix spike/matrix spike duplicates (MS/MSD) will be collected as stated below. Field QC samples are not required for waste

characterization sampling. Disposable sampling equipment will be used; therefore, equipment blanks will not be collected.

### **3.6.1 Field Duplicate Samples**

Field duplicates are field samples prepared from homogenized samples collected from one location that has been split between two sets of sample jars, labeled uniquely. They are intended to represent the same population and are taken through all steps of the analytical procedure in an identical manner. These samples are used to assess precision of the entire data collection activity, including sampling, analysis, and site heterogeneity. One Field duplicate is currently anticipated to be collected and analyzed. Any additional field duplicates will be collected on 10 percent of the samples or one every ten samples.

### **3.6.2 Matrix Spike/Matrix Spike Duplicate**

MS/MSD is an aliquot of sample spiked with known concentrations of all target analytes. The spiking occurs before sample preparation and analysis. The MS/MSD samples are used to document potential matrix effects associated with a site. The MS/MSD will be designated on the chain of custody. One MS/MSD is currently anticipated to be collected and forwarded to the laboratory for preparation and analysis. Any additional MS/MSD samples will be collected on 5 percent of the samples or 1 every 20 samples.

## **3.7 Laboratory Data Deliverable**

Laboratory reports used to support waste stream disposal will consist of Level B packages. Laboratory reports associated with the confirmation sampling will consist of Level C data packages as defined below. All non-detected results will be reported to the method detection limit. All detected analytical results must be flagged as an estimated concentration with a "J" when the detected result is between the method detection limit and the reporting limit.

Level C data packages will include the following:

- Cover letter with the following information:
  - Title of report and laboratory unique report identification (e.g., sample delivery group number)
  - Project name and site location
  - Name and location of laboratory and second-site or subcontracted laboratory
  - Client name and address
  - Statement of authenticity and official signature and title of person authorizing release of the report
- Table of Contents
- Summary of samples received that correlates field sample identifications with the laboratory identifications
- Laboratory qualifier flags and definitions
- Analytical batch reference number that cross references samples to QC sample analyses

- Completed chain of custody forms and sample receipt checklist
- Case narrative that addresses the following:
  - Sample receipt discrepancies (e.g., temperature exceedances)
  - Descriptions of all non-conformances in the sample receipt, handling, preparation, analytical and reporting processes, and the corrective action taken for each occurrence
  - Identification and justification for sample dilution
- Field ID
- Date received
- Date prepared
- Date analyzed (and time of analysis if the holding time is less than or equal to 48 hours)
- Preparation and analytical methods
- Result for each analyte (dry-weight basis for soils)
- Percent solids results for soil samples
- Dilution factor (provide both diluted and undiluted results when available)
- Sample-specific reporting limit (RL) adjusted for sample size, dilution/concentration
- Sample-specific method detection limit (MDL) adjusted for sample size, dilution/concentration (when project objectives require reporting less than the RL)
- Units of measure
- Surrogate percent recoveries (%R)
- MS/MSD and laboratory control sample (LCS) spike concentrations, native sample results, spiked sample results, %R, and relative percent differences (RPD) between the MS and MSD results; associated QC limits must also be provided
- Method blank results
- Analytical sequence or laboratory run log that contains sufficient information to correlate samples reported in the summary results to the associated method QC information, such as initial and continuing calibration analyses
- Calibration blank results for inorganic analyses (required in hardcopy format only)
- Internal standard recovery and retention time information, as applicable
- Initial calibration summary, including standard concentrations, response factors, average response factors, relative standard deviations or correlation coefficients, and calibration plots or equations, if applicable (required in hardcopy format only)
- Continuing calibration verification summary, including expected and recovered concentrations and percent differences (required in hardcopy format only)

- Any other method-specific QC sample results

### **3.8 Electronic Analytical Record Format**

All geospatial data and analytical data will be provided to Maine DEP and NAVFAC MIDLANT electronically. The electronic data deliverable (EDD) for Maine DEP will comply with Maine Environmental and Geographic Analysis Database (EGAD) requirements. Additionally, the EDD for NAVFAC MIDLANT submittal will follow the requirements of Naval Installation Restoration Information Solution (NIRIS).

### **3.9 Data Validation**

The analytical data will be validated by the project chemist and qualified based on standard Department of Defense (DoD) practices and industry standards. In addition, 10 percent of the analytical data will be validated by a qualified third party reviewer to ensure data quality and usability.

The results of the data validation will be discussed in a separate report so overall data quality can be verified through the precision, accuracy, representativeness, comparability, and completeness of sample results.

# 4.0 Environmental Protection Plan

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The demolition and excavation work to be performed at the Sabino Hill Rake Tower may have adverse impacts on the environment. During the field work, temporary controls will be installed and maintained to minimize the environmental impacts and to meet the intent of federal, state, and local regulations designed to protect the environment. The temporary controls will include, but are not limited to site access control, erosion and sediment controls (silt fence, hay bales, etc.), construction debris and waste control, water pollution control, dust control, and spill control.

All spills and releases to the environment above a reportable quantity must be immediately reported to Maine DEP at 1-800-482-0777 (24 hours/day) and the National Response Center (NRC) (1-800-424-8802). AGVIQ-CH2M HILL will notify the Navy ROICC who in turn will follow Base protocols to report all such spills to Maine DEP and the NRC.

The following sections provide details of spill prevention and control measures that will be implemented during remediation activities.

## 4.1 Spill Prevention

All fuel, chemical, and waste storage areas will be properly protected from on- and offsite vehicle traffic. All tanks (including fuel storage and waste storage) will be equipped with secondary containment. These tanks will be inspected daily for signs of leaks. Accumulated water will be inspected for signs of contamination (e.g., product sheen, discoloration, and odor) before being discarded. If accumulated water shows signs of contamination, then store the water along with other generated water for characterization and disposal. Fire protection provisions outlined in the HSP will be adhered to.

Chemical products will be properly stored, transferred, and used. Should chemical product use occur outside areas equipped with spill control materials; adequate spill control materials will be maintained at the local work area.

## 4.2 Spill Containment and Control

Spill control materials will be maintained in the support zone, at fuel storage and dispensing locations, at waste storage areas, and at areas where liquids are transferred from one vessel to another. Incidental spills will be contained with sorbent and disposed of properly. Spilled materials must be immediately contained and controlled. Spill response procedures include:

- Immediately warn any nearby workers and notify supervisor.
- Assess the spill area to ensure that it is safe to respond.
- Evacuate area if spill presents an emergency.
- Ensure any nearby ignition sources are immediately eliminated.
- Stop source of spill.

- Establish site control for spill area.
- Contain and control spilled material through use of sorbent booms, pads, or other material.
- Use proper personal protective equipment in responding to spills.

### **4.3 Spill Cleanup and Removal**

All spilled material, contaminated absorbent and contaminated media will be cleaned up and removed as soon as possible. Contaminated spill material will be drummed, labeled, and properly stored until material is disposed of. Contaminated spill material will be managed as waste and disposed of according to applicable federal, state, and local requirements.

### **4.4 Erosion Control**

During activities that have the potential to disturb the land, the following practices will be implemented:

- The smallest practical area will be disturbed during demolition.
- Trees will be protected from any demolition activity. No ropes, cables, or guy lines will be fastened or attached to any existing trees.
- Temporary erosion and sediment controls will be used to prevent sediment from discharging to surrounding areas. Structural controls may include the use of straw bales, silt fences, earth dikes, drainage swales, and sediment traps.
- Material staging areas will be properly barricaded for containment and to control run-off as needed.

### **4.5 Temporary Access Control**

Temporary barricades and caution signs will be provided around the work areas to limit and control traffic in and around the work areas.

### **4.6 Dust Control**

All demolition and field construction activities will be performed in a manner that limits blowing dust and tracking of mud onto access roads. Access roads will be swept or washed as necessary to keep roads clean and free of mud from construction activities.

### **4.7 Noise Control**

Noise levels during demolition activities may exceed the OSHA Permissible Exposure Limit (PEL) of 85 decibels, particularly in the immediate vicinity of the equipment. Hearing protection will be required when operating heavy equipment. Noise monitoring may be performed to ensure that noise levels are below permissible limits at the site boundaries and at the location of nearby receptors.

## 4.8 Protection of Land Resources

Land resources (e.g., trees and shrubs) will be preserved in their present condition or restored as near as possible to their natural appearance. Trees outside of any clearing limits will be protected during demolition, excavation or backfilling activities within the root zone, wherever possible. No ropes, cables, or guy lines will be fastened to or attached to any existing trees for anchorage unless specifically authorized by the Navy. Where trees may be defaced, bruised, injured, or otherwise damaged by equipment or construction operations, boards, planks, or poles may be placed around them for protection. Rocks that are displaced into uncleared areas will be removed. Monuments, markers, or other similar structures will be protected before beginning construction operations.

# 5.0 Quality Control Plan

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This Quality Control Plan details the quality administrators, the project organization, and the construction inspections associated with the work to be completed at the Sabino Hill Rake Station No. 1. The ROICC will approve submittals as identified in the Submittal Register (see Appendix B).

The project organization chart on Figure 5-1 depicts the chain of command for this TO and the individuals responsible for executing the work as indicated. Individual roles and responsibilities of TO personnel are summarized in Table 5-1.

## 5.1 Project QC Manager

The Project QC Manager will be Mr. Nate Price. Mr. Price has successfully completed the U.S. Army Corps of Engineers (USACE) Construction Quality Management training course.

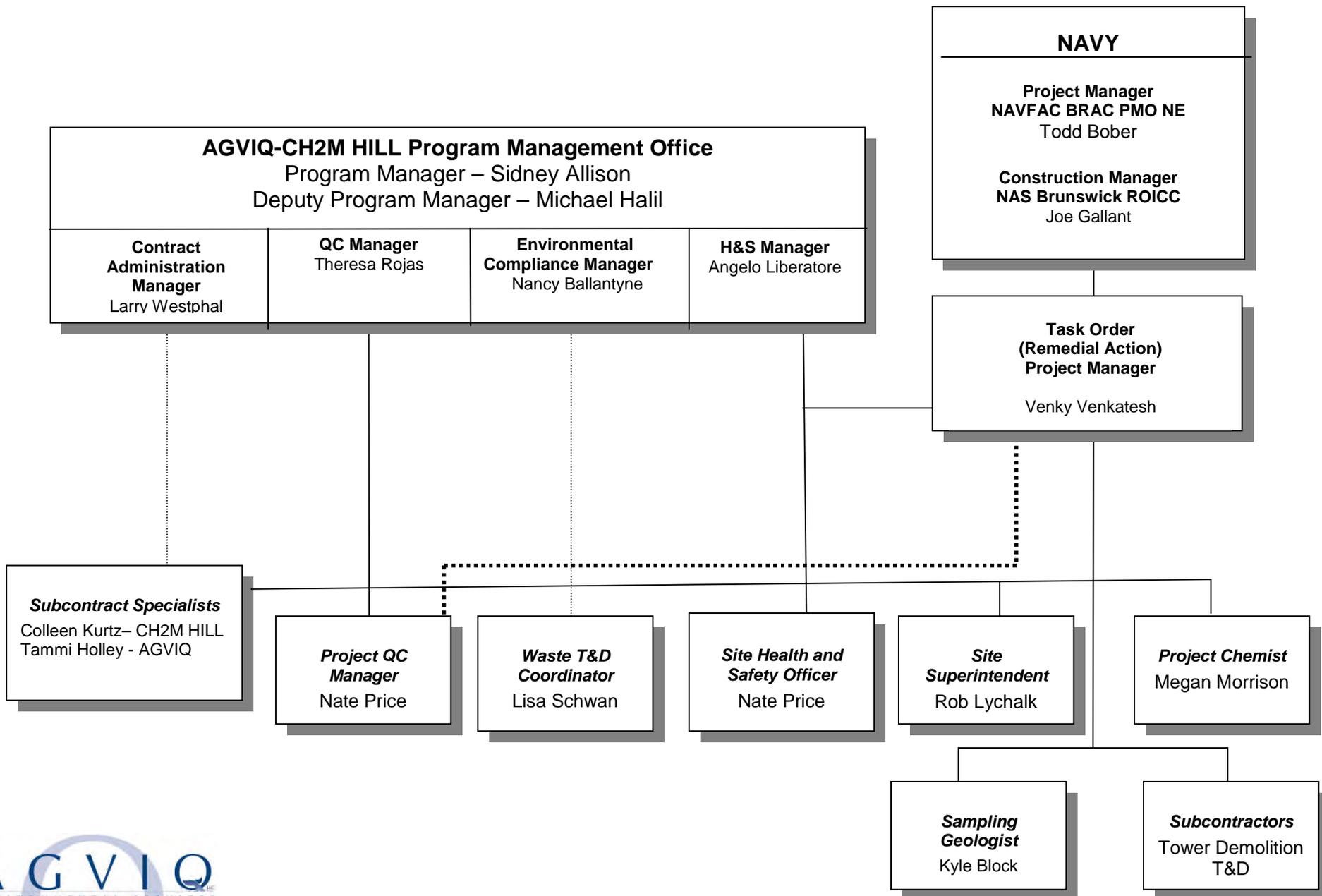
## 5.2 Testing and Sampling

Soil samples will be collected and packaged for laboratory shipment by AGVIQ-CH2M HILL. The sampling activities will be conducted in accordance with Section 3.0, Sampling and Analysis Plan. The laboratory performing analytical testing will comply with the quality requirements established by the Maine HETL and the Navy Installation Restoration Chemical Data Quality Manual (IR CDQM), NFESC SP-2056-ENV, which includes the DoD Quality System Manual. The more stringent requirements of the two documents will apply.

## 5.3 General QC

Environmental samples will be collected in accordance with methods and procedures identified in Section 3.0, Sampling and Analysis Plan. Other controls will include, but are not limited to, maintaining a sample chain-of-custody; proper handling, packing, and shipping; and the use of qualified laboratories. The Project QC Manager will verify the following:

- Facilities and testing equipment are available and comply with testing standards.
- Field test instruments are calibrated to the manufacturer's recommendation.
- The operation and maintenance of the recovery systems is performed in accordance with the respective manufacturer's equipment manuals.
- Recording forms, including all of the test documentation requirements, have been prepared and are accurate and complete.
- Work has been performed in accordance with the project plans, specifications, and drawings.
- Changes to the project plans, specifications, and drawings are fully documented and approved, as appropriate.



**Figure 5-1**  
Project Organization Chart

**TABLE 5-1**  
Roles, Responsibilities, and Authorities of Key Project Personnel

<b>Role</b>	<b>Responsibility</b>	<b>Authority</b>
Project Manager	<ul style="list-style-type: none"> <li>• Management and technical direction of all work</li> <li>• Communicate with NAVFAC MIDLANT RPM</li> <li>• Subcontractor management</li> <li>• Select staff to implement the remedy at the Sabino Hill Rake Station No. 1</li> <li>• Develop this Work Plan and supporting plans</li> <li>• Meet performance objectives for the cleanup of the Sabino Hill Rake Station No. 1</li> <li>• Prepare monthly status reports</li> <li>• Prepare Field Change Requests</li> </ul>	<ul style="list-style-type: none"> <li>• Review technical qualifications of subcontractors</li> <li>• Approve subcontractor selection</li> <li>• Approve invoices to sent NAVFAC MIDLANT</li> <li>• Approve baseline remedial schedule</li> <li>• Stop work at the site for any reason</li> <li>• Approve payment to vendors and suppliers</li> <li>• Approve payment to subcontractors</li> <li>• Respond to Design Change Notices</li> </ul>
Site Superintendent	<ul style="list-style-type: none"> <li>• Responsible for all site activities</li> <li>• Provide direction to field personnel and subcontractors</li> <li>• Onsite construction management</li> <li>• Provide daily status reports</li> <li>• Implement this Work Plan</li> <li>• Review subcontractor qualifications</li> <li>• Stop work for unsafe conditions or practices</li> </ul>	<ul style="list-style-type: none"> <li>• Stop work as necessary</li> <li>• Approve corrective action for site inspections and assessments</li> <li>• Approve materials and labor costs for site operations</li> <li>• Resolve field personnel and/or subcontractor interface issues</li> <li>• Approve daily and weekly status reports</li> </ul>
Project QC Manager	<ul style="list-style-type: none"> <li>• Monitor and oversee implementation compliance with scope of work</li> <li>• Review requests for changes in scope of work</li> <li>• Recommend improvements in work techniques or metrics</li> <li>• Monitor and report on subcontractor quality and quantities</li> <li>• Audit subcontractor's offsite fabrication</li> <li>• Maintain Submittal Register</li> </ul>	<ul style="list-style-type: none"> <li>• Complete daily quality report</li> <li>• Monitor and report on subcontractor quality and quantities</li> <li>• Audit offsite fabrication</li> <li>• Maintain Submittal Register</li> <li>• Stop work for non-compliant operations</li> <li>• Maintain Rework Items list</li> <li>• Stop work for non-compliant operations</li> </ul>
Site Health and Safety Specialist	<ul style="list-style-type: none"> <li>• Monitor and report on field personnel and/or subcontractor safety and health performance</li> <li>• Record and report safety statistics</li> <li>• Conduct needed site safety and health orientation and daily safety meetings</li> <li>• Maintain Environmental Log</li> <li>• Stop work for unsafe practices or conditions</li> </ul>	<ul style="list-style-type: none"> <li>• Stop work for unsafe practices or conditions</li> <li>• Approve site-specific Accident Prevention Plan</li> <li>• Set weekly safety objectives</li> <li>• Approve resumption of work for resolved safety issues</li> </ul>
Subcontract Specialist	<ul style="list-style-type: none"> <li>• Prepare and submit bid packages</li> <li>• Purchase disposable materials</li> <li>• Maintain subcontract log</li> <li>• Approve payables for disposable items</li> <li>• Maintain government property records</li> </ul>	<ul style="list-style-type: none"> <li>• Review contractual qualifications of subcontractors</li> <li>• Review subcontractor selection</li> <li>• Maintain record of all procurement</li> </ul>

**TABLE 5-1**  
Roles, Responsibilities, and Authorities of Key Project Personnel

<b>Role</b>	<b>Responsibility</b>	<b>Authority</b>
Project Chemist	<ul style="list-style-type: none"> <li>• Prepare bid packages for laboratories</li> <li>• Data review and data validation</li> </ul>	<ul style="list-style-type: none"> <li>• Review technical qualifications of laboratories</li> <li>• Review laboratory selection</li> <li>• Perform data reviews and data validation</li> </ul>

## 5.4 Construction Quality Control

The construction quality controls applicable to the work activities described in Section 2 of this Work Plan are outlined in the following subsections. The Project QC Manager and/or the Project Superintendent will verify conformance with the field requirements. The Project QC Manager will perform final inspections of the materials and the overall work activities. The inspections are performed to ensure safe, efficient, high quality work is performed, while meeting the objectives and requirements of the Work Plan.

The work tasks for this project are grouped into definable features of work (DFOWs), which are work activities that are significant enough to warrant distinct plans and specifications. Following are the DFOWs for this project:

- Mobilization and Site Preparation
- ACM and Universal Waste Abatement
- Demolition of Tower
- Excavation of Contaminated Soil
- Confirmation Sample Collection
- Backfill and Site Restoration
- Waste Management
- Demobilization

The DFOWs will be inspected in accordance with the three phases of control – Preparatory, Initial, and Follow-up. An overview of the inspection provisions is outlined in the subsections that follow.

### 5.4.1 Mobilization and Site Preparation

As part of the mobilization activity, a pre-construction meeting will be held to review the preparedness to begin the project, the overall project scope and schedule, communications and reporting. The preparedness check will verify that site preparation provisions such as permitting/approvals, utility clearances, demarcating the work zones, and staging of equipment and material, as needed, are in place to begin the intrusive work activities. Coordination and completion of the permanent disconnection of power to the tower will be performed. The licensed electrician responsible for verifying that electricity has been de-energized will be identified. Additionally, equipment and materials will be verified functional and in good working condition prior to starting the project.

## Preparatory Phase

The preparatory phase will include a review of the relevant AHAs, the Work Plan, communications matrix, project schedule, submittal status, and confirmation of appropriate materials and equipment are onsite or are in the process of mobilizing to the site.

## Initial Phase

Inspections will be made as necessary to verify construction limits are defined, utilities marked, and material staged in the designated areas.

## Follow-up Phase

The Project QC Manager will provide continuous oversight of the site preparation activities to verify that the work is completed in accordance with the requirements provided in this Work Plan. Deficiencies will be noted and corrected.

The quality controls that will be implemented during mobilization and site preparation activities are listed below.

Task	Procedures/Construction Details
Pre-construction Meeting	<ul style="list-style-type: none"><li>• Verification of excavation permit and utility clearance from the NASB Maine Base</li><li>• Verification of designated locations of excavation area, equipment layout, material and waste staging, and decontamination</li></ul>
Site Walk	<ul style="list-style-type: none"><li>• Verification of site layout plan</li><li>• Verification of Environmental Conditions Report</li></ul>
Pre-construction Submittals	<ul style="list-style-type: none"><li>• Plans and specifications (including subcontractor plans)</li><li>• Personnel qualification and certifications, including subcontractor personnel</li><li>• Copy of electrician license</li></ul>
Temporary Facilities	<ul style="list-style-type: none"><li>• Verification of temporary facilities for conformance with the NASB Maine Base</li><li>• Verify implementation of environmental protection measures, as needed</li></ul>

## 5.4.4 Demolition

Removal of potentially mercury containing materials will be completed prior to demolition. The suspected materials are four fluorescent light bulbs, a thermostat and switch. They will be removed, packaged and segregated for proper disposal. Other environmentally sensitive materials known to exist include asbestos containing caulking associated with the windows of the tower. Led by an asbestos abatement competent person, individuals trained in asbestos abatement will remove, package, handle and clear the tower of ACM following incremental demolition of the tower. ACM will be handled once the impacted components are safely lowered to the ground.

Demolition will be performed in accordance with the procedures identified in the demolition subcontractors' abatement and demolition plan. Equipment will be operated in a safe, efficient manner, taking precautionary measures to prevent injury to personnel and damages to equipment.

Demolition debris will be segregated (primarily metal and concrete) to the extent practicable with the intent to maximize the quantity generated for recycling. Commingling of waste materials will be minimized to maximize the use of recyclable materials. Waste materials

planned for disposal will be sufficiently downsized for placement into waste transport containers.

### **Preparatory Phase**

During the preparatory phase meeting, the demolition approach, relevant AHAs and lift plan, as well as equipment operator training records will be reviewed. Traffic control at the immediate work area and the selected haul routes for offsite shipment of wastes from the Sabino Hill Rake Station facility will be discussed. For waste tracking purposes, the protocol for receiving empty transport vehicles, loading transport vehicles, and manifesting each shipment will be coordinated.

### **Initial Phase**

The initial phase inspection includes general oversight of the means and methods to strategically dismantle the structure. Observations to identify hazards posed by the demolition and implementation of measures to mitigate dust migration will be performed. Safe and efficient operation of heavy equipment is required. The results of observations will be documented. Deficiencies will be immediately corrected.

### **Follow-up Phase**

During the follow-up phase, the completed work, project records and written procedures will be inspected to ensure compliance with this Work Plan and any approved work plan revisions or procedures developed during the project. Deficiencies will be noted and corrected immediately.

The following quality controls will be implemented during environmental media abatement and demolition activities:

<b>Task</b>	<b>Procedures/Construction Details</b>
Demolition	<ul style="list-style-type: none"><li>• Verify removal of ACM and mercury containing materials</li><li>• Ensure surfaces where hot cutting will be performed are paint free and/or appropriate personal protective equipment (PPE) is donned</li><li>• Ascertain work areas have appropriate containment</li><li>• Update and maintain waste tracking log</li><li>• Verify manifest documents and shipping papers</li><li>• Verify the field instruments are calibrated in accordance with manufacturers' recommendations</li><li>• Verify recording forms, including all of the test documentation requirements, have been prepared and are accurate and complete</li><li>• Ensure adequate removal of support structures and management of wastes</li><li>• Obtain submittals for asbestos workers and ACM competent person</li></ul>

## **5.4.5 Field Sampling**

AGVIQ-CH2M HILL will sample various media for offsite laboratory analyses. Environmental samples will be collected in accordance with Section 3.0, Sampling and Analysis Plan. Other controls will include, but are not limited to, maintaining a chain of custody; proper handling, packing, and shipping; and the use of a certified offsite laboratory.

## Preparatory Phase

The preparatory phase for sample collection activities includes a review of the sampling procedures provided in Section 3.0 Sampling and Analysis Plan, verifying acceptance of the selected laboratory for offsite sample testing, and confirming that the appropriate equipment and materials are available to complete the sampling activities.

## Initial Phase

Post excavation confirmation and waste characterization sampling activities will be audited for conformance with the written sampling procedures. During this process, representativeness of collected samples based on field conditions and observations will be considered.

## Follow-up Phase

Sample collection locations and activities will be properly documented during collection activities. Analytical reports from the approved laboratory will be reviewed for accuracy and completeness. If required, data quality and quality assurance information from the laboratory will be reviewed to identify discrepancies and resolve data quality issues with the analytical data. AGVIQ-CH2M HILL quality assurance personnel will review and tabulate laboratory confirmation data and field sampling results.

The following quality controls will be implemented during the sample collection and analysis activities:

Task	Procedures/Construction Details
Field Sampling	<ul style="list-style-type: none"><li>• Sampling equipment decontamination (if disposable equipment is not used)</li><li>• Document existing monuments and structures</li><li>• Acquire copy of offsite laboratory certification</li><li>• Implement sampling approach as described in the SAP</li><li>• Verify appropriate facilities, testing equipment, and field sampling equipment are available and comply with testing standards</li><li>• Verify the field instruments are calibrated in accordance with manufacturers' recommendations</li><li>• Verify recording forms, including all of the test documentation requirements, have been prepared and are accurate and complete</li><li>• Prepare and maintain sample log</li><li>• Coordinate with project chemist to determine excavation endpoint</li></ul>

## 5.4.6 Excavation, Backfilling, and Site Restoration

### Preparatory Phase

The preparatory phase will include the following: reviewing the relevant AHAs, reviewing the requirements provided in the Remedial Work Plan and the site-specific HSP; verifying acceptance and approval of the utility clearance; determining status of borrow source selected for use as backfill; and confirming that craftsmen are available to complete the work. Containers and waste staging areas will be prepared and managed in accordance with the protocols of Section 6.0, Waste Management Plan.

## Initial Phase

As the excavation activities proceed, the Project QC Manager will conduct initial inspections and monitor the work completed to verify conformity with the Work Plan. Initial inspections will include the following items to ensure that they are completed:

- Ensure that perimeter of excavation is demarcated.
- Monitor excavation depth and control of excavation to desired lines and grades.
- Necessary dust control and suppression measures are taken, if needed.

Any deficiencies noted will be documented and corrected as necessary.

## Follow-up Phase

The Project QC Manager will be responsible for the ongoing inspection of excavation and site restoration activities. Surveillance will verify that the work is being completed according to the Work Plan provisions. The following quality checks will be completed:

- Measure and record horizontal and vertical boundaries to verify excavation depth and width.
- Inspect placement of erosion control measures.
- Maintain chronological journal of visual observations while work activities progress.
- Verify approval to backfill completed excavations and determine adequate soil compaction effort during backfill.
- Monitor segregation and management of wastes.

The following quality controls will be implemented during the excavation, backfilling and site restoration activities:

Task	Inspection/Construction Control
Excavation and Site Restoration	<ul style="list-style-type: none"><li>• Inspect placement of erosion control measures</li><li>• Control devices locations properly laid out and marked prior to installation</li><li>• Control devices properly installed</li><li>• Assist with selecting sampling locations</li><li>• Control devices are regularly maintained, cleaned, and silt removed</li><li>• Confirmation sample results are received, determine excavation completion</li><li>• Monitor segregation and management of wastes</li></ul>

## 5.4.7 Waste Management

### Preparatory Phase

The preparatory phase for transportation and disposal of waste streams includes reviewing the Waste Management Plan included in this Work Plan, verifying disposal, recycling, or treatment facility qualifications; managing transportation schedule for hauling material offsite; and confirming that the appropriate equipment and materials, such as waste manifests, are available to commence the work activity. Review and acceptance of the waste disposal package by the AGVIQ-CH2M HILL Waste Coordinator is required prior to submitting the package to the Navy for approval. Prior to any work, the relevant AHAs will

be reviewed and discussed. All temporary storage containers will be inspected prior to acceptance onto the project and labeled.

**Initial Phase**

This phase includes inspecting the waste transport vehicles (roll-off containers, end-dumps, transports, etc.) prior to accepting on the job. Containers used for hazardous soil transport will be lined prior to loading. Containers used for transporting liquids will be free of liquids and other foreign materials prior to filling. Information provided on the waste manifest must be verified as complete and accurate including, but not limited to, generator name, address and signature, date, type of material being hauled, designated disposal, recycling, or treatment facility, and volume and/or weight of material. Any discrepancies on waste manifest documents will be corrected.

**Follow-up Phase**

This phase includes verifying that the designated disposal, recycling or treatment facility has accepted and treated the waste material at the facility and has sent the required completed manifest to the generator or the generator’s technical representative. Receipt of the certificate of recycling or disposal from the designated facility must be verified, as well as that the invoice is complete and accurate. A field logbook and an electronic log of all transportation and disposal shipments will be maintained. Containers, tanks, and roll-off containers will be routinely inspected for integrity and inventoried. Waste storage areas (including areas with stockpiles, containers, tanks, or roll-off containers) will be visually inspected on a daily basis for releases or signs of corrosion, deterioration, or other conditions that could result in a release. These results of all inspections will be recorded.

The following quality controls will be implemented during waste management activities:

<b>Task</b>	<b>Inspection/Construction Control</b>
Waste Management	<ul style="list-style-type: none"> <li>• Waste Container/Storage Area Inspection</li> <li>• Incoming transport containers for contamination</li> <li>• Outgoing transport containers for leaks, contamination adhering to outer/outside walls of containers</li> <li>• Transportation and/or transfer documentation/records</li> <li>• Final waste documentation including certificates of disposal/destruction/recycling</li> <li>• Waste Tracking Log</li> </ul>

**5.4.8 Decontamination and Demobilization**

Equipment utilized to perform intrusive work will be decontaminated in accordance with the provisions of the HSP (Appendix A). Pre-final inspection for cleanliness will be performed by the Site Superintendent/Site Health and Safety Specialist. Final equipment inspections will be performed and documented by the Project QC Manager or his/her designee.

Equipment and personnel will demobilize from the site following the completion of the work activities identified in this Work Plan. The Project QC Manager will verify that the objectives of associated remedial activities have been met. A final inspection will be conducted to verify completion of all project activities. Findings, should any be identified, will be tracked, resolved, and documented during a final site walk-through inspection.

## Preparatory Phase

The preparatory phase will include a review of decontamination procedures, the site specific HSP, the waste management plan, and relevant AHAs.

## Initial Phase

The Site Superintendent will perform inspections to confirm that the objectives of the decontamination activities have been met and that the rework items, if any, have been completed to the satisfaction of AGVIQ-CH2M HILL and the Navy.

## Follow-up Phase

The Project QC Manager will provide continuous oversight of the decontamination and demobilization to verify that the work is completed in accordance with the requirements provided in this Work Plan. Deficiencies will be noted and corrected.

The following quality controls will be implemented during decontamination and demobilization activities:

Task	Inspection/Construction Control
Decontamination and Demobilization	<ul style="list-style-type: none"><li>• Proper decontamination equipment installed</li><li>• Waste collection system in place and appropriate for the job</li><li>• Spill prevention and recovery plan in place</li><li>• Equipment is properly decontaminated</li><li>• Sufficient equipment and supplies on hand</li><li>• Waste is correctly staged, labeled, and inventoried</li><li>• Work areas to ensure all temporary facilities, equipment, and materials are safely removed from the site</li><li>• Work areas to ensure proper housekeeping and cleaning</li><li>• Decontamination of equipment</li><li>• Completion inspection when work is substantially complete</li><li>• Punch lists on outstanding items</li><li>• Conduct Final Inspection</li><li>• Orderly Site Demobilization</li><li>• Collation of Site Records and Documents</li><li>• Records and Documentation Transfer to Program Management Office</li><li>• Purchase Order Closeouts</li><li>• Final Reports and Deliverables</li></ul>

# 6.0 Waste Management Plan

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This plan addresses the management and disposal requirements for wastes generated during Sabino Hill Rake Station No. 1 remediation activities at NAS Brunswick. The following wastes may be generated during these activities:

- Asbestos and universal wastes
- Demolition debris including:
  - Refuse from demolition: concrete piers, plastic sheets, etc.
  - Recyclable metal
- Lead-contaminated soil
- Decontamination water

## 6.1 Waste Characterization

Environmental media will be characterized through sampling and laboratory analysis. Construction debris and miscellaneous solid wastes will be characterized using process knowledge. Wastes will be sampled and analyzed according to Section 3.0 Sampling and Analysis Plan, and characterized in accordance with Title 40 CFR Part 261 Subpart C. Uncontaminated wastes and debris such as office trash will be classified and disposed as municipal solid waste.

### 6.1.1 Waste Profile

Waste characterization information for wastes will be documented on a waste profile form provided by the designated offsite treatment, disposal, or recycling facility as part of the waste acceptance process. The profile will be reviewed, approved, and signed by the Base Environmental Manager. Signed profile(s) will then be submitted to the offsite facility for acceptance.

The profile typically requires information including but not limited to the following:

- Generator information including name, address, contact, and phone number
- Site name including street/ mailing address
- Process generating waste (e.g., Sabino Hill Rake Station No. 1 Remediation)
- Source of contamination (e.g., LBP)
- Historical use for area (e.g., industrial)
- Waste composition (e.g., 95 percent soil, 5 percent debris)
- Physical state of waste (e.g., solid, liquid)
- Hazardous waste codes (if applicable)

A copy of the approved waste profile or letter of approval will be received prior to scheduling offsite transportation of the waste.

## 6.2 General Waste Management Requirements

Wastes will be accumulated in an area identified or approved by the Navy ROICC. All containers will be inspected on arrival at the site for signs of disrepair or contamination, and to verify that the containers are empty. If container does not arrive in good condition, is contaminated, or is not empty, it will be immediately rejected and documented. Good housekeeping practices will be maintained at all waste accumulation areas.

### 6.2.1 Containment

- Lead-contaminated soil will be placed in roll-off containers for transport and disposal.
- Aqueous wastes will be contained in drums with secondary containment.
- C&D debris, scrap metal, and general debris will be placed in roll-off boxes.

#### Drums/Small Containers

The following guidelines relate to drums and small containers:

- Drums and small containers will be transported to the temporary accumulation areas on wood pallets and will be secured together with non-metallic banding under secondary containment.
- Drums will be inspected and inventoried upon arrival onsite for signs of contamination and/or deterioration.
- Adequate aisle space (e.g., 30 inches) will be provided for containers such as 55-gallon drums to allow the unobstructed movement of personnel and equipment. A row of drums should be no more than two drums wide.
- Each drum will be provided with its own label, and labels will be visible.
- Drums will remain closed except when removing or adding waste to the drum. Covers will be properly secured at the end of each workday. Closed means that the lid and/or bung must be on and securely tightened (except with adding or removing waste).
- Drums will be disposed with the contents. If the contents are removed from the drums for offsite transportation and treatment or disposal, the drums will be decontaminated prior to re-use or before leaving the site.
- Drums containing liquids or hazardous waste will be provided with secondary containment and may not be located near a stormwater inlet or conveyance.

#### Roll-off Boxes

- Roll-off boxes will be inspected upon arrival onsite. Any roll-off containers arriving with contents or deterioration will be rejected.
- Roll-off boxes for contaminated soil will be provided with covers and disposable liners. Liners will be disposed as contaminated debris.
- When not in use and at the end of each workday, covers will be properly secured.

- Old labels will be removed and each box will be provided with its own label, and labels will be visible.
- Roll-off containers will be inspected by the transporter after removal of the liner and decontaminated in the event of evidence of liner failure
- Free liquids, other than an incidental amount of liquid, may not be added to waste in a roll-off box.
- Saturated soils will be placed in a roll-off box provided with sealable containment or a container otherwise designed for free liquids (e.g., dewatering box).
- Roll-off containers will filled until half full, or otherwise monitored to ensure that they will meet U.S. Department of Transportation (DOT) weight restrictions.
- Roll-off boxes may not be located near a storm water inlet or conveyance.

## 6.2.2 Labels

Waste containers will be labeled in accordance with 49 CFR 172, 173, and 178. Labels will include the type of waste, location from which the waste was generated, and accumulation start date. Containers, roll-off boxes, and tanks used to store/accumulate waste (including soil and groundwater) will include one of the following labels:

- “Analysis Pending” - Temporary or handwritten label until analytical results are received and reviewed. This label will include the accumulation start date.
- “Hazardous Waste” - Pre-printed hazardous waste labels with the following information:
  - Accumulation start date
  - Generator Name
  - U.S. Environmental Protection Agency (EPA) ID number
  - Waste codes
  - Prior to transport, the manifest number must be added (for containers of less than 110-gallon capacity)
- “Non-Hazardous Waste” - Preprinted labels with the following information:
  - Accumulation start date
  - Generator name:
  - EPA ID number
  - Waste-specific information (e.g., contaminated soil)

Where applicable, the major hazards (e.g., flammable, oxidizer, and carcinogen) also will be included on the label.

## 6.2.3 Inspections

Waste accumulation and equipment storage areas will be inspected daily for malfunctions, deterioration, discharges, and leaks that could result in a release.

- Containers and roll-off containers will be inspected for leaks, signs of corrosion, or signs of general deterioration.
- All areas will be inspected to ensure that good housekeeping practices are maintained.

Any deficiencies observed or noted during inspection will be corrected immediately, and corrective measures documented. Appropriate measures may include transfer of waste from leaking container to new container, replacement of liner or cover, or repair of containment berm. Copies of inspection reports and corrective measures will be maintained onsite, and available for review.

## 6.3 Security/Emergency Response

A barrier, such as barricade tape or temporary fencing, will be provided for hazardous waste accumulation areas, and for other waste storage areas that are accessible to the public. Hazardous waste storage areas will also have signs that provide 24-hour emergency contacts and telephone numbers.

Waste accumulation areas will contain emergency response equipment appropriate to the wastes' hazards. The HSP (Appendix A) identifies the project emergency response procedures and equipment, including emergency response contacts and phone numbers.

In addition to the HSP procedures, hazardous waste accumulation areas will be provided with fire extinguishers (for wastes known or suspected to be flammable or ignitable), decontamination equipment, and an alarm system (if radio equipment is not available to all staff working in accumulation area). Spill control equipment (e.g., sorbent pads) will be available in the waste accumulation areas and where liquids are transferred from one vessel to another.

## 6.4 Employee Training

Field staff that will manage hazardous or potentially hazardous waste will comply with 40 CFR 265.16 through:

- OSHA 1910.120 Hazardous Waste Operations and Emergency Response (HAZWOPER) training
- On-the-job training, which includes:
  - Site-specific HSP review – requires each site worker and guests to review and sign the plan
  - AHA and daily “tailgate” meetings
  - Project-specific Work Plan review

Additionally, AGVIQ-CH2M HILL staff with DOT hazardous material training (49 CFR 172.704) will oversee waste profiling and preparing shipping documentation.

## 6.5 Waste Transportation

### 6.5.1 Shipping Documentation

Prior to offsite disposal of any waste, a waste approval package for each waste stream will be prepared. This package will include a waste profile naming NAS Brunswick as the generator of the waste, analytical summary table(s) applicable to the waste, land disposal restriction (LDR) notification for any hazardous wastes, a completed waste manifest, and any other applicable information necessary for the Navy to complete its review of the disposal package and signature as the generator. The profile will be reviewed, approved, and signed by the Base Environmental Manager. The signed profile will then be submitted to the offsite facility for acceptance and approval. Once the approval letter is received from the offsite facility, transportation can be scheduled.

Each load of waste material will be manifested prior to leaving the site. At a minimum, the manifest form will include the following information:

- Generator information including name, address, contact, and phone number, EPA ID number
- Transporter information including name, address, contact and phone number, EPA ID number
- Designated facility information including name, address, phone number, EPA ID number
- Site name including street/ mailing address
- DOT Proper Shipping Name (e.g., Hazardous Waste Solid, n.o.s., 9, UN 3077, PG III [D008])
- Type and number of container
- Quantity of waste (volumetric estimate)
- Task order or job number
- Profile number
- 24-hour emergency phone number

Additionally, each shipment of waste will also have a weight ticket. The generator and the transporter must sign the manifest prior to the load of waste leaving the site. Hazardous waste manifests will be signed by the Base Environmental Manager. The original signed manifest will be returned to the address of the generator.

## 6.6 Department of Transportation Requirements

Requirements under 49 CFR 171 will apply to all offsite shipments of hazardous materials. The information contained in this section is provided as a general guide. Requirements specific to each hazardous material will be determined in the field. It is the responsibility of a DOT-trained individual to ensure that the requirements of 49 CFR 171 are met.

### **6.6.1 Shipping Name**

Material that exhibits one of the nine DOT hazard class characteristics (e.g., explosive, flammable, poison, combustible) is regulated under DOT rules for the transportation of hazardous material. If material is suspected to be hazardous, it will be shipped under the suspected hazard class.

Each shipment of a suspected hazardous material will be properly classified using the Hazardous Materials Table in 49 CFR 172.101. All determinations will be made by DOT-trained personnel.

### **6.6.2 Packaging, Marking, and Labeling**

The shipping name, hazard class, identification number, technical names (if applicable), EPA markings and waste code numbers, and consignee/consignor designations will be marked on packages for shipment (49 CFR 172.301). Once a waste is characterized, reference will be made to the Hazardous Materials Table in 49 CFR 172.101 to determine the appropriate label.

### **6.6.3 Placards**

Appropriate placards will be determined by DOT-trained personnel. Specific placard descriptions are found starting at 49 CFR 172.521. If a placard is required, it will be affixed on each side and each end of the vehicle.

## **6.7 Transporter Requirements**

Each transportation vehicle and load of waste will be inspected before leaving the site and documented. The quantities of waste leaving the site will be recorded on a transportation and disposal log. A contractor licensed for commercial transportation will transport non-hazardous wastes. In the event that wastes are hazardous, the transporter will have an EPA Identification number and will comply with transportation requirements outlined in 49 CFR 171-179 (DOT) and 40 CFR 263.11 and 263.31 (Hazardous Waste Transportation).

The transporter will be responsible for weighing loads at a certified scale. For each load of material, weight measurements will be obtained for each full and empty container, dump truck, or tanker truck. Disposal quantities will be based on the difference of weight measurements between the full and empty container or dump truck. Weights will be recorded on the waste manifest.

The transporter will observe the following practices when hauling and transporting wastes offsite:

- Minimize impacts to public traffic.
- Repair road damage caused by construction and/or hauling traffic.
- Line and cover trucks/trailers used for hauling hazardous or regulated waste to prevent spills or releases.
- Decontaminate vehicles prior to re-use, other than hauling contaminated waste.

- Seal trucks transporting liquids.

Wastes or materials from other projects may not be combined with wastes generated during this project.

All personnel involved in offsite disposal activities will follow safety and spill response procedures outlined in the HSP.

### **6.7.1 Spill Reporting**

In the event of a spill or release of a reportable quantity of waste, the transporter must immediately notify AGVIQ-CH2M HILL and the Navy. The following information about the spill will be reported and recorded:

- Type of material (for example, soil, sludge, or water) and contaminant
- Location
- Estimated volume
- Media affected (for example, spilled on concrete pad or soil)
- Time of spill/release
- Final disposal of spilled material

The transporter will also report any spill or release of hazardous waste, as required by 49 CFR 171.15, to the NRC at 800-424-8802 or 202-426-2675. The transporter will also report in writing, as required by 49 CFR 171.16, to the Director, Office of Hazardous Materials Regulations, Materials Transportation Bureau, Department of Transportation, Washington, D.C. 20590.

For any spill of hazardous wastewater from a bulk shipment (for example, tanker), the transporter will immediately notify the NRC (800-424-8802 or 202-267-2675), as required in 40 CFR 263.30.

### **6.7.2 Spill Response**

The transporter will clean up any spill or release of waste (including soil or water) that occurs during transportation, or take such action as may be required or approved by federal, state, or local officials. Spilled waste will be immediately cleaned up, including soils on the outside of the trucks, the truck and/or container, or road surface. Where appropriate, the spilled material will be returned to the original waste container. In any case, the spilled material will be properly contained and disposed.

## **6.8 Waste Management Requirements**

All transportation will be compliant with Maine DOT requirements for offsite transportation of hazardous and nonhazardous materials. The transporter will be required to possess a Maine DEP Waste Transporter Permit to transport lead-contaminated soil (Special Waste).

Offsite treatment, disposal, or recycling facilities will use the waste profile and supporting documentation (e.g., analytical data) to determine whether a waste will be accepted. The following is a summary of wastes and anticipated treatment, disposal, or recycling requirements:

### **6.8.1 Management of Recyclable Materials**

All recyclable materials will be transported to an approved recycler.

### **6.8.2 Management of Universal Wastes**

Universal Waste Lamps and Thermostats will be disposed of in strict accordance with 40 CFR 273, if applicable.

### **6.8.3 Management of Decontamination Water**

Decontamination water, if generated, will be collected and stored in a drum for waste characterization and offsite disposal. Based on analytical results, decontamination water will be disposed of off-site as non-hazardous waste.

### **6.8.4 Management of Office Wastes and Construction Debris**

All miscellaneous office waste (such as caution tapes, barricades, signs, and packing materials) and general construction debris (discarded materials generally considered to be not water soluble and non-hazardous in nature; e.g., fences, poly liners, plywood, etc.) will be placed in roll-off containers. Office wastes and general construction debris without any contamination is classified as Class III non-hazardous construction debris and will be disposed at a landfill permitted to accept such wastes. No waste material and/or debris will be buried or otherwise allowed to remain on the site.

## **6.9 Recordkeeping**

The following records and documents will be maintained:

- Transportation and offsite disposal records, including:
  - Profiles and associated characterization data
  - Manifests, LDR notifications/certifications, bills of lading, and weight tickets
  - Offsite facility waste receipts, certificates of disposal/destruction
- Training records
- Inspection records

## 7.0 References

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AGVIQ-CH2M HILL. 2009. Technical Memorandum, Environmental Surveys at Sabino Hill Rake Station No. 1 Phippsburg, Maine. September.

BRAC PMO. 2006. Environmental Condition of Property Report for the Naval Air Station, Brunswick, Maine. Department of the Navy, BRAC Program Management Office. May.

# **Appendix A**

## **Health and Safety Plan**

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# Health and Safety Plan Naval Exchange Service Station UST and Soil Removal

Naval Air Station Brunswick  
Brunswick, Maine

Revision No. 02

Contract No. N62472-08-D-1006  
Task Order No. WE01

Submitted to:



U.S. Naval Facilities  
Engineering Command  
Mid-Atlantic

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February 2010

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## Attachments

1	Accident Prevention Plan
2	Employee Signoff Form
3	Subcontractor H&S Tracking Form
4	Project H&S Forms/Permits
5	Material Safety Data Sheets
6	Chemical-Specific Training Form and Project-Specific Chemical Product Hazard Communication Form
7	Activity Hazard Analyses (AHAs)
8	Pre-Task Safety Plan (PTSP)
9	Loss Prevention Observation (LPO) Form
10	Incident Report Form Loss/Near Loss Incident Report Form
11	Emergency Contact List
12	Hurricane Preparedness Plan (Reserved)

# Acronyms and Abbreviations

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µg/L	micrograms per liter
µg/m <sup>3</sup>	micrograms per cubic meter
AAS	aquifer air sparging
AGVIQ-CH2M HILL	AGVIQ-CH2M HILL Joint Venture
AHA	Activity Hazard Analysis
AL	Action Level
ANSI	American National Standards Institute
APP	Accident Prevention Plan
ASTM	American Society for testing and Materials
BBLPS	Behavior Based Loss Prevention System
bgs	below ground surface
BTEX	benzene, toluene, ethylene, and xylenes
C&D	construction and demolition
CFR	Code of Federal Regulation
CIH	Certified Industrial Hygienist
COCs	Constituents of Concern
COPC	Chemical of Potential Concern
CPR	cardiopulmonary resuscitation
CRZ	contamination reduction zone
CSE	Confined Space Entry
dB	decibels
DEET	N, N-diethyl-meta-polyamide
DFWP	Drug Free Workplace Program
DOT	Department of Transportation
EA	EA Engineering, Science and Technology
EOD	explosive ordnance disposal
ESC	erosion and sediment control
EZ	exclusion zone
FA	first aid
FC	foot candle
FS	Feasibility Study
ft <sup>2</sup>	square feet
GFCI	ground fault circuit interrupter
GPR	ground-penetrating radar
GRO	Gasoline Range Organic
H&S	Health and Safety
HBV	Hepatitis B Virus
HIV	Human Immunodeficiency Virus
HAZWOPER	Hazard Waste Operations
HEPA	high-efficiency particulate air
HR	heart rate
HS&E	Health, Safety, and Environment

HSPA	Health and Safety Program Administrator
HSP	Health and Safety Plan
IDW	Investigation Derived Waste
IRF	Incident Report Form
KA	Contracts Administrator
LPO	Loss Prevention Observation
m	meter(s)
MEC	munitions of explosive concern
$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
mg/kg	milligrams per kilogram
MPPEH	material presenting a potentially explosive hazard
MSDS	Material Safety Data Sheet
MTBE	methyl tertiary butyl ether
NAVFAC MIDLANT	Naval Facilities Engineering Command, Mid-Atlantic
National Commission for the Certification of Crane Operators (NCCCO)	National Commission for the Certification of Crane Operators
NEX	Navy Exchange
NIOSH	National Institute for Occupational Health
NLI	Near Loss Investigation
NSC	National Safety Council
NTR	Navy Technical Representative
OEL	Occupational Exposure Limit
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
POC	Point of Contact
PPE	Personal Protective Equipment
ppb	parts per billion
ppm	parts per million
PTSP	Pre-Task Safety Plan
RA	Remedial Action
SWMU	Solid Waste Management Units
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RF	radio frequency
RMSF	Southern Tick-Associated Rash Illness
ROICC	Resident Officer in Charge of Construction
SOP	Standard of Practice
SOW	Statement of Work
SSC	Site Safety Coordinator (synonymous with SSHO)
SSHO	Site Safety and Health Officer
SSHS	Site Safety and Health Specialist (synonymous with SSHO)
STARI	Southern Tick-Associated Rash Illness
SVE	soil vapor extraction
SVOC	semivolatile organic compound

SWO	Stop Work Order
SZ	Support Zone
TO	Task Order
TPH	total petroleum hydrocarbon
TSCA	Toxic Substances Control Act
UL	Underwriters Laboratory
UST	underground storage tank
UV	ultraviolet
UXO	unexploded ordnance
VOCs	volatile organic compound
WIS	waste information sheet

# 1.0 Introduction

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AGVIQ-CH2M HILL Constructors, Inc. Joint Venture (AGVIQ-CH2M HILL) has prepared this Health and Safety Plan (HSP) in response to the Naval Facilities Engineering Command, Mid-Atlantic (NAVFAC MIDLANT), Statement of Work (SOW) for Task Order (TO) No. WE01.

It is the intent of this HSP and the Accident Prevention Plan (APP) in **Attachment 1** of this HSP, to address requirements set forth by 29 Code of Federal Regulations (CFR) 1910, 29 CFR 1926 and EM 385 1-1, Appendix A, but especially the requirements of 29CFR1910.120. For clarification, this HSP and APP shall be collectively referenced as the HSP throughout, but implemented together as a single document, in their entirety.

Signatory authorization of the HSP and APP preparer and designated AGVIQ-CH2M HILL personnel who approve and concur that this HSP and its components are acceptable for full project implementation is included in section 11.0 "Approvals" of this HSP, as well as Section 1.0 of **Attachment 1**, "Signatures."

Contact information for these designated personnel is provided in Section 2.2.1, Section 11.0 and **Attachment 1**, Section 1.0 of this HSP.

A hardcopy of this HSP and APP, inclusive of the project Remedial Action Work Plan (RAWP) and its other components shall be available on-site for reference by site personnel.

All site personnel, including AGVIQ-CH2M HILL and subcontractors, who may be covered by this Health and Safety Plan (HSP), must review or be provided a detailed briefing on the contents of this document and sign the Employee Signoff Form (**Attachment 2**).

## 1.1 Site Background

The Site is located approximately between NEX Service Station (Buildings 538) and the Family Services Building (Building 27) at the Brunswick NAS. The Site is contaminated from prior release of petroleum from gasoline underground storage tanks (UST) and their distribution system located at the NEX service station (Building 538). The storage tanks are located up-gradient of the family services building.

The NEX service station building is approximately 5,300 square feet (ft<sup>2</sup>) in area and consists of a service garage with two bays, an active pump island, and three 10,000-gal gasoline USTs that were installed in 1993 (EA Engineering, Science and Technology [EA], 1996, *Final Site Investigation at Building 27, Naval Air Station, Brunswick, Maine*. Prepared for the Department of the Navy. July). Along the western side of the service station building are two aboveground storage tanks (one 275-gallon waste oil tank and one 550-gallon fuel oil tank). The family services Center building is approximately 7,900 ft<sup>2</sup> in area single story concrete structure built on a concrete slab and contains office space and a heating utility/boiler room. A footing drain system was installed along the bottom of the perimeter of the building to divert the shallow groundwater table around the building and into the storm sewer system (ES, 1996).

The NEX service station has been operated as a petroleum distributor since approximately 1957. Gasoline odors were first reported in the vicinity of the NEX service station in 1981. To remedy the problem a groundwater recovery system was installed in 1984. A remedial investigation was conducted at the Site in 1992 leading to the design and installation of a soil vapor extraction/aquifer air sparging (SVE/AAS) system. Groundwater samples at the time detected reportable levels of benzene, toluene, ethylbenzene, and xylene (BTEX) (281,000 micrograms per liter [ $\mu\text{g}/\text{L}$ ]), methyl tertiary butyl ether (MTBE) (1,500  $\mu\text{g}/\text{L}$ ) and total petroleum hydrocarbon (TPH) (2,000,000  $\mu\text{g}/\text{L}$ ) (EA, 1996). Since the initial SVE/AAS was implemented several cleanup pilot studies such as a chemical oxidation, and most recently denitrification based biodegradation have failed to reduce Gasoline Range Organics (GRO) to acceptable levels. Sampling results from 2003 detected levels for GRO as high as 50  $\mu\text{g}/\text{L}$  in groundwater and soil levels as high as 8,830 milligrams per kilogram (mg/kg).

The current three active 10,000-gallon gasoline USTs located at the NEX service station were installed in 1993 and replaced three former 10,000-gallon USTs which had inhabited the Site since 1974. During the UST removal and replacement visibly contaminated soil and groundwater was observed with confirmatory samples detecting elevated levels of TPH and BTEX (ATEC, 1993, *Site Assessment at Facility Closure, Removal of Three 10,000-gallon Gasoline Underground Storage Tanks*. Prepared for NAVFAC Contracts. April.)

Two 5,000-gallon gasoline USTs (removed prior to 1974) and one 550-gallon waste oil UST (removed in November 1989) were historically located at the Site; no record of these removals were located or reviewed (ERM, 1992, *Naval Exchange Service Station, Final Remedial Investigation Final Technical Report*. Prepared for the Naval Facilities Engineering Command. September).

## 1.2 General Task Order Scope of Work

The following objectives will be accomplished following execution of the work outlined in the Remedial Action Work Plan:

- Re-route utilities located in the area of the excavation.
- Removal and disposal of three 10,000-gallon USTs and associated piping
- Removal of soil contaminated with TPH-GRO above 200 mg/kg
- Remove groundwater from the excavation area such that soils above 200 mg/kg for TPH - GRO in soils can be disposed of after removal
- Backfill excavation with clean soils compacted to Maine DOT specifications
- Demolition of the Sabino Hill Rake Tower site in Phippsburg, ME

## 1.3 Health and Safety Plan Assumption Set

The assumption set for the development of this HSP is that AGVIQ-CH2M HILL site personnel and AGVIQ-CH2M HILL controlled subcontractors, who may be covered by this HSP, will not be exposed to identified constituents of concern (COCs), or chemical products that may be used

in operational processes, in excess of established Occupational Exposure Limits (OELs) while executing their assigned tasks. This assumption is based on the following:

- Site personnel shall execute good personal hygiene practices to facilitate a negative exposure to identified site COCs via incidental dermal or ingestion exposure vectors.
- Where use of personal protective equipment (PPE) equipment is specified, it will be used in accordance with Section 5.0 of this HSP.
- Where the use of air monitoring equipment is specified, it shall be in accordance with Section 6.0 of this HSP. Action levels and action level responses defined by this HSP shall be adhered to. Air monitoring data collected during the execution of the task order work phases shall be documented and included for the project file.
- Work is being performed in an open air, well ventilated environment. This in combination with the low risk potential for exposure to site COCs within the surface areas that these COCs may be encountered during intrusive operations, it is anticipated that personnel will not be exposed to identified site COCs in excess of established OELs while performing their assigned duties.
- Unexploded ordnance (UXO), munitions of explosive concern (MEC), or materials presenting a potentially explosive hazard (MPPEH) will not be encountered, handled, or otherwise managed under this contract and UXO avoidance support is not required per the conditions of the contract.

In the event that the above assumption set is not verified, the conditions of this HSP will be re-evaluated and amended as necessary to address applicable hazards that maybe associated with newly encountered project conditions or newly defined project tasks. In the event that recorded air monitoring data indicates that site workers are or may be exposed to site COC concentrations in excess of established OELs, work shall immediately cease until such engineering or administrative control measures and/or PPE are implemented to reduce potential worker exposures to acceptable levels.

## 1.4 HAZWOPER-Regulated Tasks

Where certain work tasks include the handling, removal, containment, investigation, or other physical site management of hazardous waste/material or other regulated materials, execution of such tasks and potential employee exposure to chemical hazards associated with these tasks may be regulated under 29 Code of Federal Regulation (CFR) 1910.120/29 CFR 1926.65. For this task order, following activities will be considered Hazardous Waste Operations (HAZWOPER)-regulated tasks because of the potential worker exposure to identified site contaminants.

- Land and Utility Survey Activities to support the remedial objectives where site soil or water impacted by TPH-GRO constituents are disturbed or there is a potential site worker exposure to TPH-GRO constituents or other identified site COCs
- Installation of Erosion and Sediment Control (ESC) measures, where site soil or water impacted by TPH-GRO constituents are disturbed or there is a potential site worker exposure to TPH-GRO constituents or other identified site COCs

- Re-route underground utilities located in the area of the excavation where site soil or water impacted by TPH-GRO constituents are disturbed or there is a potential site worker exposure to TPH-GRO constituents or other identified site COCs
- Above ground demolition of UST System Fuel Island
- Removal and disposal of three 10,000-gallon USTs and associated piping
- Installation and removal of the Sheeting/Shoring system required to facilitate soil impacted by TPH-GRO
- Removal of soil impacted by TPH-GRO
- Removal and/or management of groundwater from the excavation area such that soils above 200 mg/kg for TPH – GRO in soils can be disposed of after removal
- Various site restoration activities (backfilling, seeding) where site soil or water impacted by TPH-GRO constituents are disturbed or there is a potential site worker exposure to TPH-GRO constituents or other identified site COCs
- Abatement of Asbestos Containing Material (caulking, tile) from the Rake Tower, Sabino Hill, Phippsburg, ME (under the requirements of 29 CFR 1926.1101 and Maine DEP - Chapter 425, by subcontractors)
- Removal of limited lead based paint to facilitate final demolition of the Rake Tower, Sabino Hill, Phippsburg, ME. (by subcontractors)
- Excavation of lead impacted soil at the Rake Tower, Sabino Hill, Phippsburg, ME

Personnel performing the above work phase tasks or in conditions where there is potential exposure to TPH-GRO or other site COCS, shall meet the training and medical surveillance requirements established by section 2.0, Employee Medical Surveillance and Training, of this HSP.

## 1.5 Non-HAZWOPER-Regulated Tasks

Under specific circumstances, the training and medical monitoring requirements of HAZWOPER regulations under 29 CFR 1910.120/29 CFR 1926.65 may be not applicable. Where this is considered, it must be demonstrated that the assigned tasks can be performed without the possibility of exposure to chemical hazards in order to use personnel who do not meet the criteria established by these standards. A determination from the Health and Safety Program Administrators (HSPA) and/or Program Certified Industrial Hygienist (CIH) is required before project tasks are conducted by personnel who do not meet the requirements of 29 CFR 1910.120/29 CFR 1926.65 and if where there is question to potential exposure to chemical hazards. Where it is not possible that workers could not be exposed to site chemical hazards during the normal execution of assigned tasks, the task can be considered a Non-HAZWOPER Regulated Task. For this project, the following activities can be considered Non-HAZWOPER Regulated Tasks.

- Mobilization and demobilization

- Land and Utility Survey Activities to support the remedial objectives where site soil or water impacted by TPH-GRO constituents are not disturbed or there is no potential site worker exposure to TPH-GRO constituents or other identified site COCs
- Installation of Erosion and Sediment Control (ESC) measures, where site soil or water impacted by TPH-GRO constituents are not disturbed or there is no potential site worker exposure to TPH-GRO constituents or other identified site COCs
- Various site restoration activities (backfilling, seeding) where site soil or water impacted by TPH-GRO constituents are not disturbed or there is no potential site worker exposure to TPH-GRO constituents or other identified site COCs
- Demolition of the Rake Tower, Sabino Hill, Phippsburg, ME (by subcontractors)

## 1.6 Activity Hazard Analysis Basis

Table 1-1 below summarizes identified hazards associated with the phases of work anticipated with the project execution. Table 1-1 provides the basis for the development of Activity Hazard Analysis documents, which must be implemented as part of the AGVIQ-CH2M HILL Health and Safety Program, Behavior Based Loss Prevention System (BBLPS). Please refer to Section 4.0 of this HSP for additional detail on the BBLPS.

**Attachment 7** of HSP contains applicable Activity Hazard Analysis (AHA) documents, which in addition to the content of this HSP/APP, are intended to reinforce project or program requirements and present project control measures for anticipated or encountered hazards that may occur during the execution of an employee's assigned tasks.

Table 1-1: Activity Hazard Analysis Basis (Page 1 of 2)

Potential Hazards	Project Activities – WE06											
	Mobiliz. & Demob.	Land & Utility Surveys	Site Preparation (including ESC Installation)	Utility Re-route	Demolition of the Fuel Island	Installation of Sheeting System	Excavation, potentially Contaminated Soil, dewatering and sample collection	Tank and piping removal	Transport of contaminated media	Site Restoration - Backfill	Site Restoration Revegetation	Equipment Cleaning
Adverse Weather	X	X	X	X	X	X	X	X	X	X	X	X
Biological	X	X	X	X	X	X	X	X	X	X	X	X
Buried Utilities			X	X	X	X	X	X				
Brushcutters/Mowers			X									
Chemical Hazards			X	X	X	X	X	X	X			X
Compressed Gas Cylin.						X						
Concrete and Masonry												
Confined Space Entry												
Cuts/Abrasions	X	X	X	X	X	X	X	X	X		X	X
Cranes				X		X						
Demolition/dismantling				X	X			X				
Electrical Safety	X			X	X	X		X				X
Drilling (HSA/DPT)												
Excavations				X	X	X	X	X	X			
Fall Protection				X		X	X	X	X			
Fire/Explosion Hazards				X	X	X		X				
Forklifts												
Fire Prevention	X		X	X	X	X	X	X	X	X	X	X
Hand & Power Tools	X		X	X	X	X		X			X	X
Haul Truck Operations	X			X	X	X	X	X	X			
Heat/Cold Stress	X	X	X	X	X	X	X	X	X	X	X	X
Heavy Equipment	X			X	X	X	X	X	X	X	X	X
Housekeeping	X	X	X	X	X	X	X	X	X	X	X	X
Ladders & Stairs				X	X	X	X	X				
Land Clearing / Stripping			X									
Lockout /Tagout				X	X			X				
Manual Lifting	X	X	X	X	X	X	X	X	X	X	X	X
Material Handling				X	X	X	X	X	X	X	X	
Machine Guarding						X						
Noise	X		X	X	X	X	X	X	X	X	X	X
Overhead Utilities	X			X	X	X	X	X	X	X	X	
Pinch/Struck by/Caught	X	X	X	X	X	X	X	X	X	X	X	
Pressure Washing								X				X
Pressurized Lines/ Equip.				X	X	X		X				X
Rigging					X	X		X				
Scaffolding												
Slips/Trips/Falls	X	X	X	X	X	X	X	X	X	X	X	X
Spill Prevention				X	X	X	X	X	X	X	X	X
Suspended Loads				X	X	X		X	X	X		
Vacuum Truck Ops.												
Vehicle Traffic	X	X		X	X			X	X			
Visible Lighting	X	X	X	X	X	X	X	X	X	X	X	X
Welding and cutting				X	X	X		X				
Working Alone												
Working over water												

TABLE 1-1: ACTIVITY HAZARD ANALYSIS BASIS (PAGE 2 OF 2)

Potential Hazards	Project Activities		
	Excavation of & Management of Lead Impacted Soil and Confirmation Sampling		
Adverse Weather	X		
Aerial Lifts			
Biological	X		
Buried Utilities/Objects	X		
Chainsaws/Brushcutters			
Chemical Hazards	X		
Compressed Gas Cylinders			
Concrete and Masonry			
Confined Space Entry			
Cranes			
Cuts/Abrasions			
Demolition/Dismantling			
Electrical Safety			
Drilling			
Excavations / Trenching	X		
Fall Protection			
Fire/Explosion Hazards			
Forklifts			
Fire Prevention	X		
Hand & Power Tools			
Haul Truck Operations	X		
Heat Stress/Cold Stress	X		
Heavy Equipment	X		
Housekeeping	X		
Ladders & Stairs			
Lockout /Tagout			
Manual Lifting			
Mechanical Guarding Hazards			
Material Handling Hazards			
Noise	X		
Pinch/Struck by			
Pressure Washing/ Equip Decon			
Pressurized Lines/ Equip.			
Sample & IDW Handling	X		
Scaffolding			
Spill Prevention Preparedness			
Slips/Trips/Falls	X		
Rigging			
Suspended Loads	X		
UXO/MPPEH/MEC			
Vacuum Truck Ops.			
Vehicle Traffic			
Visible Lighting	X		
Welding & Cutting			
Working Alone			
Working over water			

# 2.0 Project Organization and Personnel

## 2.1 Employee Medical Surveillance and Training

All AGVIQ-CH2MHILL personnel performing Hazwoper Regulated Tasks are enrolled in a Comprehensive Health and Safety Program, which at a minimum, meets the requirements of 29CFR1910.120/29CFR1926.65 or 29CFR1910.134. These medical surveillance and training requirements are summarized below.

Training or Medical Surveillance Requirement	Applicability
29CFR1910.120(e)(3)/29CFR1926.65(e)(3) Note: 40 hr or 24 training as applicable to employee assigned duties.	All site personnel performing Hazwoper regulated activities identified in section 1.4 of this HSP.
29CFR1910.120(e)(8)/29CFR1926.65(e)(8) annual basis	All site personnel performing Hazwoper regulated activities identified in section 1.4 of this HSP.
29CFR1910.120(e)(4)/29CFR1926.65(e)(4)	All site manager, supervisory or SSHO personnel performing Hazwoper regulated activities identified in section 1.4 of this HSP.
First Aid/CPR 1st Aid – typically 3 yr renewal CPR – 1 or 2 yr renewal (depending on sponsor)	All designated manager, supervisory or SSHO site personnel (2 per site).
29CFR1910.120(f)/29CFR1926.65(f) annual basis under the supervision of a licensed physician, preferably one knowledgeable in occupational medicine	All site personnel performing Hazwoper regulated activities identified in section 1.4 of this HSP.
29CFR1910.134(e) annual basis under the supervision of a licensed physician, preferably one knowledgeable in occupational medicine	All site personnel performing Hazwoper regulated activities identified in section 1.4 of this HSP and required to utilize respiratory protection
29CFR1910.1025(l)/29CFR1926.62(l)	Personnel performing lead impacted soil removal – Rake Tower, Sabino Hill

Initial training required by 29CFR1910.120(e)(3)/29CFR1926.65(e)(3) shall be 40-hour or 24-hour training initial training, and 3-day/1 day on-the-job experience in accordance with employee’s normal assigned duties and anticipated site conditions as applicable to the requirements of CFR1910.120(e)(3)(i)-(iv)/29CFR1926.65(e)(3) (i)-(iv). Site personnel performing operations falling under the requirements of 29CFR1910.120/29CFR1926.65 shall also have 8 hours of “refresher training” on an annual basis, in accordance with 29CFR1910.120(e)(8)/29CFR1926.65(e)(8).

On-site management and supervisors directly responsible for, or who supervise employees engaged in, hazardous waste operations and individuals designated as an SSHO shall also have an additional 8 hours of “management and supervisor” training defined by 29CFR1910.120(e)(8)/29CFR1926.65(e)(8).

Subcontractors performing operations applicable to the 29CFR1910.120/29CFR1926.65 requirements must also adhere to the above training and medical surveillance requirements.

In addition, each employee with SSHO responsibilities shall have received an OSHA 10 hr Outreach Construction Safety training course (OSHA 10hr), or equivalent (i.e. CH2MHILL Site

Safety Coordinator (SSC) training), where construction related operations are also occurring on-site.

At a minimum, personnel designated with management, supervisor, or SSHO responsibilities must all have current American Red Cross or American Heart Association sponsored First Aid and Cardio-Pulmonary Resuscitation (FA-CPR) certifications. At least two FA-CPR designated employees must be present during all tasks performed in exclusion or decontamination zones. However, when a medical facility or physician is not accessible within five (5) minutes of an injury to a group of two or more employees for treatment of injuries, at least two employees on each shift shall be trained to administer First Aid and CPR. Individuals certified in FA and CPR and have received training in exercising universal precautions against exposure to bloodborne pathogens as a component to FA/CPR training which meets the intent of 29CFR1910.1030. This employee training is also complemented by other regularly scheduled employer training curriculums that are typically executed for the HAZWOPER industry, regulated under 29CFR1910.120/29CFR1926.26.

In addition, certain key project site personnel will have received training in accordance with 49CFR172.700.

Pregnant employees are to be informed of and are to follow the procedures in the CH2M HILL, Inc. Standard of Practice (SOP) HSE-120, *Reproduction Protection*, including obtaining a physician’s statement of the employee’s ability to perform hazardous activities before being assigned fieldwork.

The designated AGVIQ-CH2MHILL key site personnel, listed below, maintain current training and are enrolled in a medical surveillance program meeting the requirements of 29CFR1910.120/29CFR1926.65 for hazardous waste operations. However, employees performing certain assigned tasks (e.g., confined-space entry, scaffold, fall protection, forklift operations etc.) will involve additional training. Employees being exposed to certain air borne chemicals or contaminants may require medical monitoring requirements defined by OSHA standards, as applicable to anticipated site conditions.

Employee Name	Responsibility	Completed Requirements
Rob Lychalk	Supervisor / SSHO alternate	<u>Training:</u> 29CFR1910.120(e)(3), (e)(4), (e)(8) FA-CPR, OSHA 10hr - Construction, Competent Person – Excavation 29CFR1926, Subpart P, 49CFR172.700 <u>Medical Surveillance:</u> 29CFR1910(f) and 29CFR1910.134(e)
Nathanial Price	QCM / SSHO alternate	<u>Training:</u> 29CFR1910.120(e)(3), (e)(4), (e)(8) FA-CPR, SSC (OSHA 10hr equiv.) <u>Medical Surveillance:</u> 29CFR1910(f) and 29CFR1910.134(e)
Will Knox	SSHO	<u>Training:</u> 29CFR1910.120(e)(3), (e)(4), (e)(8) FA-CPR, SSC (OSHA 10hr equiv.) <u>Medical Surveillance:</u> 29CFR1910(f) and 29CFR1910.134(e)

## 2.2 Project Safety Responsibilities

The Project Manager has the overall responsibility for this project and will ensure that the requirements of the contract are attained in a manner consistent with this HSP and other contract-specific requirements. The Project Manager will coordinate and verify with the SSHO to ensure that the executed work is completed in a manner that is consistent with this HSP and the procedures adopted by the AGVIQ-CH2M HILL Joint Venture Program.

The SSHO will be the main contact in any onsite emergency coordination or communication situation and will ensure offsite emergency agencies have been contacted prior to the start of and verify that emergency contact numbers contained in this HSP are accurate/operational work. The SSHO will communicate with all potential emergency response organizations that would respond to an on-site emergency condition. In the event that during and emergency situation, the primary SSHO is not available or not capable of performing this function, an alternate SSHO or Site Superintendent can fulfill these duties.

The Health and Safety Program Administrator(s) (HSPA) or CIH is responsible for formulating and reviewing the HSP and ensuring that the HSP is complete and accurate. The HSPA or CIH also provides technical and administrative support for the AGVIQ-CH2M HILL Health and Safety Program and will be available for consultation when required. The CIH shall review and “approve” the HSP for field implementation and also be available for consultation project Industrial Hygiene and worker exposure matters, as may be required by the project team.

Each employee is responsible for their personal safety as well as the safety of others in the work area.

### 2.2.1 Key Safety Personnel

The following individuals AGVIQ-CH2M HILL share responsibility for health and safety at the site:

**AGVIQ-CH2M HILL Joint Venture Program Manager**

Sidney Allison: (843) 242-8018/843-813-2672 (cell)

**AGVIQ-CH2M HILL Joint Venture Deputy Program Manager**

Michael Halil: (904) 777-4812/904-219-6277 (cell)

**AGVIQ-CH2M HILL Joint Venture Project Manager (overall)**

Venky Venkatesh: (215) 640-9391 / 216-235-8613 (cell)

**AGVIQ-CH2M HILL Joint Venture Supervisor / SSHO alternate**

Rob Lychalk: (757) 544-0524 (cell)

**AGVIQ-CH2M HILL Joint Venture Project QCM / SSHO alternate**

Nathaniel Price: (757)671-6280/336-457-3094 (cell)

**AGVIQ-CH2M HILL Joint Venture Project SSHO**

Will Knox: (678) 758-8206 (cell)

**AGVIQ-CH2M HILL Joint Venture H&S Program CIH**

Angelo Liberatore, CIH, CSP: (678) 530 4210/ (770) 335-2076 (cell)

## **AGVIQ-CH2M HILL Joint Venture H&S Program Administrator(s)**

Mark Orman, CSP, CHMM: (414) 847-0597/ (414) 712-4138 (cell)

Glen Jackson, CHST, ASP: (757) 318-9420 x12/ (757) 644-8293 (cell)

### **2.2.1.1 Project Manager**

The AGVIQ-CH2M HILL Project Manager is responsible for providing adequate resources (budget and staff) for project-specific implementation of the Health, Safety and Environment (HS&E) management process. The Project Manager has overall management responsibility for the project tasks identified herein. The Project Manager may explicitly delegate specific tasks to other staff, as described in sections that follow, but retains ultimate responsibility for completion of the following in accordance with this HSP.

- Include standard terms and conditions, and contract-specific HS&E roles and responsibilities in contract and subcontract agreements (including flow-down requirements to lower-tier subcontractors).
- Select safe and competent subcontractors by:
  - Obtaining, reviewing, and accepting or rejecting subcontractor pre-qualification questionnaires.
  - Ensuring that acceptable certificates of insurance, including AGVIQ-CH2M HILL as named additional insured, are secured as a condition of subcontract award.
  - Including HS&E submittals checklist in subcontract agreements, and ensuring that appropriate site-specific safety procedures, training and medical monitoring records are reviewed and accepted prior to the start of subcontractor's field operations.
- Maintain copies of subcontracts and subcontractor certificates of insurance (including AGVIQ-CH2M HILL as named additional insured), bond, contractor's license, training and medical monitoring records, and site-specific safety procedures in the project file accessible to site personnel.
- Provide oversight of subcontractor HS&E practices per the site-specific safety plan.
- Manage the site and interface with third parties in a manner consistent with our contract and subcontract agreements and the applicable standard of reasonable care.
- Ensure that both the overall and job-specific HS&E goals are fully and consistently implemented.

### **2.2.1.2 Health and Safety Program Administrator(s)**

The Health and Safety Program Administrator(s) (HSPA) responsibilities include the following:

- Develop and/or review the project HSP for final approval by the CIH.
- Review and accept or reject subcontractor pre-qualification questionnaires that fall outside the performance range delegated to the Contracts Administrator (KA).
- Review and accept or reject subcontractor training records and site-specific safety procedures prior to start of subcontractor's field operations.

- Support the SSHO's oversight of subcontractor (and lower-tier subcontractors) Health, Safety, and Environment (HS&E) practices and interfaces with third parties, as necessary.
- Support and assist program staff in executing the HS&E policies and procedures adopted by the program for implementation, including the program Behavior Based Loss Prevention System (BBLPS). Provide consultation and direction to project staff with regard to HS&E project and program requirements and industrial hygiene practices.

### 2.2.1.3 Certified Industrial Hygienist

The Health and Safety Program certified Industrial Hygienist (CIH) include the following:

- Shall review and approve the project specific HSP for field implementation.
- Also be available for consultation/direction with regard to project Industrial Hygiene and worker exposure matters, as may be required by the project team/HSPA.
- Perform the same roles and responsibilities as the HSPA, where required.

### 2.2.1.4 Site Safety and Health Officer

The SSHO is responsible for verifying that the project is conducted in a safe manner including the following specific obligations:

- Verify this HSP remains current and amended when project activities or conditions change.
- Verify AGVIQ-CH2M HILL site personnel and subcontractor personnel read, or have been briefed on the contents of this HSP, and sign **Attachment 2** "Employee Signoff Form" prior to commencing field activities.
- Verify AGVIQ-CH2M HILL site personnel and subcontractor personnel have completed any required specialty training (e.g., fall protection, confined space entry) and medical surveillance as identified in Section 2, and maintain the Subcontractor H&S Tracking Form, where applicable (**Attachment 3**).
- Verify adherence with the requirements of this HSP and applicable the subcontractor's health and safety plan(s).
- Act as the project "Hazard Communication Coordinator".
- Act as the project "Emergency Coordinator" and perform the responsibilities outlined in this HSP or as maybe required to properly coordinate the on-site response of emergencies, as they arise.
- Verify that safety meetings are conducted at least daily or more frequently as project tasks or hazards change and documented for the project record in accordance with the requirements of the BBLPS.
- Verify that project H&S forms and permits, found in **Attachment 4**, are being used as intended.
- Verify that Project Activity Self-Assessment Checklists, found in the CH2M HILL, Inc. SOPs referenced in this HSP, are being used as intended.
- Implement the Drug-Free Workplace Program.

- Verify that project files available to site personnel include copies of executed subcontracts and subcontractor certificates of insurance (including named additional insured), bond, contractor's license, training and medical monitoring records, and site-specific safety procedures prior to start of subcontractor's field operations.
- Manage interface with third parties in a manner consistent with our contract/ subcontract agreements and the applicable standard of reasonable care.
- Coordinate with the HSPA(s) or CIH regarding AGVIQ-CH2M HILL and subcontractor operational performance, and third-party interfaces.
- Ensure that the overall, job-specific, HS&E goals are fully and continuously implemented.

The SSHO is responsible for coordinating with the AGVIQ-CH2M HILL individual responsible for site operations (i.e., Site Superintendent/Manager or Field Team Leader) and Project Manager, as necessary. In general, the Project Manager will contact the client in the event accidents, injuries or property damage occurs on the project site. The CIH or HSPA(s), as necessary, should be contacted by the SSHO as appropriate.

## 2.3 Subcontractors

Subcontractors covered by this HSP must be provided a copy of it to read and accept prior to initiating work on this site. However, this plan does not address hazards associated with the tasks and equipment that the subcontractor has expertise in (e.g., electrical, excavation, demolition). Subcontractors are responsible for the health and safety procedures specific to their work, and are required to submit these procedures to AGVIQ-CH2M HILL for review before the start of field work. It is critical that subcontractor work be performed in a manner that is consistent with applicable OSHA standards (29CFR1910, 29CFR1926), EM 385 1-1 or other applicable health and safety plan(s)/protocols. The AGVIQ-CH2M HILL SSHO should verify that subcontractor employee training, medical clearance, and fit test records (where applicable) are current and must monitor and verify Subcontractor adherence with the established plan(s). AGVIQ-CH2M HILL oversight does not relieve subcontractors of their responsibility for effective implementation and compliance with the established plan(s), protocols, or established safety regulations.

AGVIQ-CH2M HILL should continuously endeavor to observe subcontractors' safety performance. This goal should be reasonable, and include observing for hazards or practices and procedures that are not consistent with established Health and Safety (H&S) requirements that are both readily observable and occur in common work areas. AGVIQ-CH2M HILL is not responsible for exhaustive observation for hazards and unsafe practices. In addition to this level of observation, the SSHO is responsible for confirming AGVIQ-CH2M HILL subcontractor performance against both the subcontractor's safety plan and applicable self-assessment measures. Project Activity Self-Assessment Checklists contained in referenced CH2M HILL, Inc. Standard of Practice (SOP) documents are to be used by the SSHO to review subcontractor performance.

Health and safety related communications with AGVIQ-CH2M HILL subcontractors should be conducted as follows:

- Request subcontractor personnel to read the HSP and then require them to sign the Employee Signoff Form included in **Attachment 2** of this HSP.
- Request subcontractor(s) to brief the project team on the hazards and precautions related to their work.
- When apparent conditions, actions, or practices are observed that are not consistent with this HSP, AGVIQ-CH2M HILL Health and Safety Program, or other Health and Safety protocols, notify the subcontractor safety representative and require corrective action – the subcontractor is responsible for determining and implementing necessary controls and corrective actions.
- When identified conditions or practices/actions that are not consistent with AGVIQ-CH2M HILL Health, Safety and Environment (HS&E) policies and procedures, or other applicable Health and Safety protocols are repeated or persist, notify the subcontractor safety representative and stop affected work until adequate corrective measures are implemented. See Stop Work Order (SWO) Form in **Attachment 4** of this HSP.
- When an apparent imminent danger exists, immediately remove all affected AGVIQ-CH2M HILL employees and subcontractors, notify subcontractor safety representative, and stop affected work until adequate corrective measures are implemented (see SWO form). Notify the Project Manager and CIH and/or the HSPA(s) as appropriate.
- Document all oral health and safety related communications in project field logbook, daily reports, or other records.
- Subcontractor Management requirements are also defined in Section 5.0 of the APP (**Attachment 1** of this HSP).

## 3.0 Project-Specific Hazards

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Exposure to certain project specific hazards in the work place may include injury/accidents or property damage due to execution of a variety of assigned tasks or as a result of existing site conditions. This section of the HSP is provided to aid in the recognition of potential specific and general project hazards and identify procedures and practices to be implemented on the job site that may reduce or eliminate accidents/injuries and property damage that may be attributed to these hazards. All AGVIQ-CH2M HILL personnel are required to contact the designated Health and Safety Program Administrators (HSPA) or Certified Industrial Hygienist (CIH) identified in this HSP regarding any questions or concerns to ensure the execution of this task order in a healthy and safe manner.

**The following areas/activities are not specifically covered under this HSP and must not be performed unless this HSP is amended and approved accordingly.**

- Areas presenting exposed energized electrical equipment.
- Areas where there is an unprotected (e.g., no guardrail) fall exposure greater than 4'.
- Areas where Unexploded Ordinance (UXO)/ Munitions and Explosives of Concern (MEC) maybe encountered.
- Activities requiring the use of scaffolding, an aerial lifts or hoisted personal platforms.
- Activities where potential radiological exposure hazards may exist
- Any other section identified in this HSP or APP marked as **(Reserved)**.

### 3.1 Adverse Weather

Sudden inclement weather can rapidly encroach upon field personnel. Because of the time of year (fall) that this project is being executed and its geographical location (central Maine) Field crew members could experience a variety of adverse weather conditions during the course of a normal work assignment. Personnel performing work outdoors should carry clothing appropriate for foul weather conditions (rain gear, hard hat liners, rubber boots, lined gloves etc). In severe weather conditions, (i.e., high wind, rain squalls, blizzards, electrical storms), the field crews must evacuate from an outdoor work environment area and find safe shelter until the weather abates and until a decision is made to resume the field activities. The following field procedures must be exercised where adverse weather is encountered or is expected to occur during an assigned work day.

- Frequently observe the skyline for developing rain squalls, thunder storms or other severe weather systems that may be developing. Check internet, local TV weather or radio channels for daily forecasts and plan daily work activities accordingly. Have a portable radio available on-site to monitoring local weather or marine forecasts. If on-site internet or radio monitoring are not available, check with the NAS Brunswick security office if severe weather systems appear to be developing. NAS Brunswick may be able to provide an update local forecast. If not check with home office support

personnel who may be able to determine the severity of developing storm systems through internet access or other methods.

- Bring clothing suitable for anticipated daily weather conditions.
- Shut down operations during heavy rain/lightning events, high wind or heavy snow conditions and identify “safe haven” location. Safe haven locations should be identified prior to the start of work. Safe haven structures must be grounded where there is a potential for a lightning event.
- Implement cold or heat stress monitoring, as necessary, defined in this HSP.

### 3.1.1 Lightning

Preparedness and caution are the best defenses against lightning. Many lightning deaths and injuries happen before or after a thunderstorm’s peak. The site manager or SHSO shall monitor weather forecasts for predictions of electrical storms in the area. At first sight of lightning, operations shall be stopped and only resumed when conditions permit. The site manager or SHSO shall monitor weather conditions to determine when it is appropriate to resume work. The lightning safety recommendation is 30-30: Seek refuge when thunder sounds within 30 seconds after a lightning flash; and do not resume activity until 30 minutes after the last thunder clap. Some other general precautions include:

- Know where to go and how long it will take to get there. If possible, take refuge in a large building or vehicle. Do not go into a shed in an open area.
- The inclination to see trees as enormous umbrellas is the most frequent and most deadly mistake. Do not go under a large tree that is standing alone. Likewise, avoid poles, antennae and towers.
- Stay away from lakes, streams, pools, or any water.
- Stay away from railroad tracks that can carry lightning charges for long distances.
- If the area is wide open, go to a valley or ravine, but be aware of flash flooding. Do not stand on top of a hill.
- If you are caught in a level open area during an electrical storm and you feel your hair stand on end, drop to your knees, bend forward and put your hands on your knees or crouch. The idea is to make yourself less vulnerable by being as low to the ground as possible and taking up as little ground space as possible. Lying down is dangerous, since the wet earth can conduct electricity. Do not touch the ground with your hands.
- Do not use telephones during electrical storms, except in the case of emergency.

## 3.2 Aerial Lifts

(Reserved)

### 3.3 Air Compressor Operations

Air compressor operations may be engaged during demolition operations, free product or residual fuel management, dewatering operations, during the installation of the excavation sheeting system and other potential activities that are ancillary to primary project tasks. When air compressors are operated at the site the following safe work practices shall be executed.

- All hoses, connections, and valves should be rated for the maximum pressure to be used in the system.
- All energized hoses must have safety lashes or tie/whip lines attached to hoses in the event that the hose coupling come loose from the compressor connection or adjacent hose coupler fittings.
- Inspect transfer lines/hoses, valves and all connections for wear, damage and security prior to use each day and replace when defective/worn.
- Wear hearing protection when working in the immediate vicinity of operating air compressors.
- The air compressor receiver tank must be equipped with a functioning pressure gauge and with one or more spring-loaded safety valves
- The total relieving capacity of the safety valve must be such to prevent pressure in the receiving tank from exceeding the tank's maximum allowable working pressure by more than 10 percent.
- No valve of any type must be placed between the air receiver tank and its safety valve.
- All safety valves must be tested monthly, or more frequently as necessary, to determine whether they are in good operating condition.

### 3.4 Asbestos

At this time, there two activities associated with the execution of this CTO which will require the disturbance or removal of Asbestos Containing Material (ACM) as follows:

- Relocation of a transite water line from the proposes remediation limits of the NAS Brunswick NEX Gas Station site
- Limited removal of ACM caulking between metal panels the Sabino Hill Rake Tower structure in Phippsburg, ME

The first activity involves the removal and relocation of a non-friable transite water line that traverses through the proposed remedial excavation at the NAS Brunswick NEX Gas Station site. The removal and relocation of this existing water line must occur to allow for the proper execution of the remedial objectives of the site.

For the second activity, it is anticipated that the demolition of the Sabino Hill Rake Tower structure in Phippsburg, ME will require some limited ACM abatement activities to allow for the proper demolition of the tower structure, without exposing demolition crews to ACM.

Both activities identified above, shall not be performed or supervised by AGVIQ-CH2MHILL personnel or personnel not meeting the Maine DEP Asbestos Management Regulations - Chapter 425 and/or 29CFR1910.1001/29CFR1926.1101 requirements. As such, this work must be subcontracted to companies that are licensed and certified for this activity and are enrolled in a medical surveillance program which is applicable to ACM removal operations. Subcontractor means and methods and standard safety control measures associated with the ACM removal at either the NEX Gas Station Site or the Sabino Hill Rake Tower demolition shall be identified by subcontractor work plans, submitted to the project Resident Officer In Charge of Construction (ROICC) or designee, under separate cover for review, as required.

Non trained and certified personnel shall not be in close proximity to these operations even though the asbestos materials to be removed is anticipated to be non-friable in nature and encapsulated in a cement or asphaltic matrix. Where ACM removal activities are occurring at either location, on-site AGVIQ-CH2MHILL personnel must be positioned in Non-Asbestos Regulated Areas (i.e. construction support areas). The information presented below is provided as general asbestos awareness for AGVIQ-CH2MHILL site personnel or other site personnel not involved with ACM removal operations. It is not intended to replace more stringent procedures or requirements established by federal and/or state regulations.

### **3.4.1 Asbestos General Awareness Information**

Asbestos is a cancer-causing mineral that was included in manufacturing process in many building materials. When disturbed harmful asbestos fibers can be released and inhaled and ingested by workers. Materials suspected of containing asbestos shall be treated as asbestos unless documentation and/or testing results indicate otherwise. Where the presence of asbestos is suspected, if at all possible, design all operations to avoid contact.

When there is a risk of disturbing asbestos and making it friable (able to release fibers when the materials are crushed, abraded or cut) the activity becomes strictly regulated. The asbestos standard for construction regulates asbestos exposure for the following activities, include but are not limited to:

- demolishing or salvaging structures where asbestos is present in concentrations greater than 1%;
- removing or encapsulating asbestos-containing materials (1% or greater asbestos content).
- constructing, altering, repairing, maintaining, or renovating asbestos-containing structures or substrates;
- installing asbestos containing products;
- cleaning up asbestos spills/emergencies; and
- transporting, disposing, storing, containing and housekeeping involving asbestos or asbestos containing products on a construction site.

However, just because asbestos containing material is not considered to be friable (i.e. “non-friable”) is still regulated activity under federal and many state requirements. Federal and

individual state regulations regarding the removal/ disturbance and disposal of non-friable asbestos containing materials must still be reviewed prior to engaging in such operations.

The key provisions of the operations that involve the disturbance repair or other handling of asbestos containing include the following:

- use of permissible exposure limits for worker exposure;
- air monitoring; use of regulated areas; use of specified control measures to reduce exposure;
- use of respiratory protection and personal protective clothing; use of hygiene facilities; communication of hazards to all on site;
- housekeeping practices; medical surveillance of workers who perform activities that disturb asbestos or work in controlled areas where asbestos is disturbed;
- use of trained competent persons including workers and supervisors; recordkeeping.

The type of controls instituted during a job that disturbs asbestos is dependant upon the class of job to be performed, but may vary widely depending upon individual state regulations where the asbestos disturbance is being performed. Typically, the following conditions apply:

**CLASS I asbestos work** (most hazardous):

Class I asbestos work involves removal of thermal suppression insulation and sprayed on or trowled-on surfacing asbestos-containing materials. This includes asbestos containing materials applied to pipes, boilers, tanks, ducts, or other structural components to prevent heat loss or gain. Surfacing materials include decorative plaster on ceilings, acoustical asbestos containing materials on decking, or fireproofing on structural members.

**CLASS II asbestos work:**

Class II asbestos work involves the removal of other types of asbestos-containing materials that are not thermal suppression insulation such as resilient flooring and roofing materials containing asbestos. Examples of Class II work include removal of floor or ceiling tiles, caulking, siding, roofing or transite panels.

**CLASS III asbestos work:**

Class III asbestos work involves repair and maintenance operations where asbestos-containing or presumed asbestos-containing materials are disturbed.

**CLASS IV asbestos work:**

CLASS IV asbestos work operations include custodial activities where employees clean up asbestos-containing waste and debris. This includes dusting contaminated surfaces, vacuuming contaminated carpets, mopping contaminated floors, and cleaning up asbestos containing materials.

If operations will disturb asbestos containing materials, personnel certified to remove asbestos, must be subcontracted by AGVIQ-CH2MHILL.

Prior to beginning work that will impact asbestos-containing materials a written asbestos abatement plan/procedures shall be developed by a qualified ACM abatement subcontractor. The asbestos abatement plan will be in accordance with 29 CFR 1926.1101 and 40 CFR 61 Subpart M and/or applicable state requirements (i.e. Maine DEP Asbestos

Management Regulations – Chapter 425). it should be noted that when the scope of an asbestos related project changes, then the associated ACM removal or abatement plan/procedures must be amended to reflect the changed conditions or operations.

Asbestos abatement subcontractors/personnel performing asbestos abatement activities are usually required to obtain state or special licenses and permits, before work begins. Asbestos abatement contractors shall provide documentation to the AGVIQ-CH2MHILL that all designated asbestos workers performing working on AGVIQ-CH2MHILL controlled sites are medically qualified, meet state/federal training requirements and a that competent person (supervisor) has been appointed for the site before any asbestos abatement work may begin.

AGVIQ-CH2MHILL employees may not enter asbestos regulated work areas unless they have completed asbestos worker training, medical monitoring (asbestos medical surveillance) and meet PPE requirements established by the competent person (typically ACM abatement supervisor) on site. Respiratory protection and other exposure controls selection shall be based on the most recent exposure monitoring results obtained from the competent person.

- Do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas.
- Do not disturb waste or other materials labeled “Danger - Asbestos Fibers.”

## 3.5 Chemical Injections

(Reserved)

## 3.6 Concrete Work

(Reference SOP # HSE&Q 302, Concrete & Masonry)

(Reserved)

## 3.7 Confined Space Entry

(Reference SOP # HSE&Q 203, Confined Space Entry)

During the execution of the project, it may be required to pump, store and treat ground water in a large volume (~21,000 gallon), above ground Fractionation Tank (Frac Tank) in order to facilitate remediation excavation/backfilling operations. Upon completion of these activities and prior to demobilization of the Frac Tank, the interior of the Frac Tank(s) will need to be cleaned/decontaminated. To do so, a Permit-Required Confined Space Entry (CSE) must be executed prior to conducting these activities.

In addition to completing the Permit Permit-Required Confined Space Entry (CSE), the Entry Supervisor shall verify that any on-site Fire/Emergency Department personnel (NAS Brunswick or local Emergency Medical Services (town of Brunswick, ME Fire Department or EMS) who may be called to provide EMS or CSE rescue entry assistance are trained, qualified and available to provide such aid to personnel who have been rescued from a

confined space by a qualified “retrieval system” or provide direct rescue entry and medical services to CSE personnel who, for whatever reason, can not be rescued from the confined space by qualified retrieval system. A qualified retrieval system shall mean the equipment (including a retrieval line, full-body harness, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces. AGVIQ-CH2MHILL personnel, or AGVIQ-CH2MHILL subcontractors who may be covered by this HSP, may not enter a Permit Required Confined Space without being attached to a qualified retrieval system.

For anticipated Permit Required Confined Space operations at NAS Brunswick associated with the cleaning/decontamination of the above ground Frac Tank(s), personnel should be entering/exiting the tanks(s) via ground level or chest level entry hatches. In this application, the use a retrieval lifting/anchoring” tripod” system is not likely to be applicable. As such, a life/retrieval line shall be connected to the entrant(s) full-body harness at all times during the entry and personnel supporting the CSE operation (Attendant/Supervisor) must be capable of retrieving the entrant(s) via their own power in order to complete a successful Non-Entry Rescue. However, if the Frac Tank has any internal rods/struts, baffles, chambers or internal configuration where entrant(s) could get caught on during an emergency retrieval which would impede a successful rescue, then the requirements of evaluating and securing a “Rescue Entry Team” in accordance with the requirements of 29CFR1910.146 shall apply and Permit Required CSE operations may not occur until such conditions are met. Where current on-site team members do not currently posses training or rescue team qualifications in accordance with these requirements, then additional properly trained AGVIQ-CH2MHILL team members, subcontractors or other identified personnel must be secured to meet site operation requirements.

**In addition to the above, review and implement all applicable components of CH2MHILL SOP # HSE&Q-203, Confined Space prior to initiating any Confine Space or Permit Required Confined Space operation.**

The information contained below is intended to provide a general understanding of confined space hazard recognition such that encountering these conditions can be managed without accident or injury to AGVIQ-CH2MHILL or subcontractor personnel.

A confined space:

- (1) Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- (2) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and
- (3) Is not designed for continuous employee occupancy.

Based on the above it is anticipated that the sheeted excavation area or other excavation may not necessary be confined spaces assuming the following occurs:

- Workers do not enter the sheeted excavation system below a 4’ – 5’ level below ground surface (bgs) of installed excavation sheeting system that will be need to

install the internal brace/strut system needed to complete the sheeting installation in accordance with the design documents, and;

- Proper access/egress points are provided (i.e. ladders, ramps etc. ) every 25' linear feet of the excavation and;
- a hazardous atmosphere or other recognized serious safety or health hazard does not develop during the progression of the work.

**However, the project field team must continually evaluate site conditions or operations to verify applicability of this requirement.**

A Non-permit confined space means a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

Often times a Confined Space may be identified as being a Permit-Required Confined Space (permit space). A Permit-Required Confined Space means a confined space that has one or more of the following characteristics:

- (1) Contains or has a potential to contain a hazardous atmosphere;
- (2) Contains a material that has the potential for engulfing an entrant;
- (3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross- section; or
- (4) Contains any other recognized serious safety or health hazard.

Based on the above, entering the interior of any frac tank that contained GRO impacted water would be considered a Permit Required Confined space. **However, at no time should any personnel enter into the interior of an intact, removed gasoline UST for the purposes of cleaning it.**

When a Confined Space is determined to be a Permit Required Confined Space, then the following requirements must be met prior to permit-required confined space entry:

- Complete Confined Space Entry training if you are a confined space entrant, attendant, or entry supervisor.
- Complete a Confined Space Entry Permit (CSEP), Alternative Procedure Certificate (APC), or Non-permit Certificate (NPC) and post it near the space entrance point for review.
- Attend a pre-entry briefing conducted by the entry supervisor if you will be entering or attending permit-required confined spaces.
- Verify that the entry supervisor has authorized entry and that all permit or certificate requirements have been satisfied.
- Only enter the space if you are listed on the Authorization/Accountability Log.
- Verify that atmospheric monitoring for hazardous atmospheres have been conducted at the frequency specified on the permit or certificate, monitoring results are documented, and results are within acceptable safe levels.
- The following requirements must be met during permit-required confined space entry:

- Maintain communication between the attendant and entrants to enable the attendant to monitor entrant status.
- Use equipment specified on the permit or certificate accordingly.
- Follow all permit or certificate requirements.
- Evacuate the space upon orders of the attendant or entry supervisor, when an alarm is sounded, or when a prohibited condition or dangerous situation is recognized.
- Inform the entry supervisor of any hazards confronted or created in the space or any problems encountered during entry.

In addition to the above, AGVIQ-CH2MHILL personnel performing Permit Required CSE operations, utilizing Respiratory Protection shall complete the following:

- The Entry Supervisor, Attendant and Entrant(s) must be CSE trained in accordance with the requirements of 29CFR1910.146.
- Shall be qualified to perform the assigned duties by proper training and/or previous experience.

Where Respiratory Protection is required to conduct permit required CSE operations, personnel shall:

- have reviewed the employer's Respiratory Protection Program most applicable to the employee performing CSE operations.
- be fit tested prior to initial use of the respirator, whenever a different respirator face piece (size, style, model or make) is used, and at least annually thereafter. An additional fit test must be performed whenever the employee reports, employer, supervisor, program administrator, Physician or other Licensed Health Care Professional (PLHCP), makes visual observations of changes in the employee's physical condition that could affect respirator fit (i.e. facial scarring, dental changes, or an obvious change in body weight).
- have received "clearance" by a licensed physician to wear respiratory protection equipment and be in a medical surveillance program.
- be determined to possession sufficient training, skill/knowledge or experience with selected Respiratory Protection equipment and other PPE to execute the employer policies and procedures identified by the Respiratory Protection Program.

### **3.7.1 CSE Ventilation**

- The ventilation air should not create an additional hazard.
- The ventilation air should not conduct recirculation of potential contaminants.
- There shall not be an improper arrangement of the inlet duct.
- The ventilation should not allow for the substitution of anything other than fresh (normal) air (approximately 20.9% oxygen, 78.1% nitrogen, and 1% argon with small amounts of various other gases).
- The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.

- The ventilation shall be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space.
- The ventilation shall be so positioned to allow for adequate access and egress of the confined space or permit required confined space.

## 3.8 Constituents of Concern

Tables 3-1 identifies the maximum concentration of site COCs that have been identified for the project sites to be accessed under this TO. Established OELs and symptoms and effects of overexposure to such COCs are also identified.

### 3.8.1 Benzene

For work associated with this task order, Benzene, at a concentration in excess of established QELs, is not anticipated but is identified as a potential site COC because of the primary material (petroleum/gasoline) to be encountered/managed. Although not anticipated to be encountered in vapor form at significant concentrations, Benzene could be emitted into the worker breathing zone during the following site activities:

- Pre-demolition OHM removal activities of the UST system canopy structure
- Removal, purging and inerting of the three 10,000-gallon USTs
- Pressure washing operations (especially where hot water or steam washing applications are employed)
- Soil excavation/soil handling operations where soil or groundwater impacted with GRO constituents is disturbed

Where this potential exposure may exist, the following must be considered.

- Do not enter regulated work areas unless training, medical monitoring, and PPE requirements established by the competent person have been met.
- Definable air monitoring data of the work environment is collected and any potential recognized inhalation, dermal contact or explosive condition has been properly mitigated.
- Do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas.
- Skin absorption is a potential route of benzene exposure.
- Benzene is considered a “Confirmed Human Carcinogen.”
- A Short Term Exposure Limit (STEL: 15 minutes) exists for this material.
- Benzene has an aromatic odor.
- Respiratory protection and other exposure controls selection shall be based on the most recent exposure monitoring results obtained from a person qualified to evaluate exposure conditions.

TABLE 3-1 CONSTITUENTS OF POTENTIAL CONCERN					
Constituents	Location & Maximum Concentration (ppb)	Exposure Limit in ppm (PEL)	IDLH (ppm)	Symptoms and Effects of Exposure	PIP <sup>d</sup> (eV)
<b>Asbestos</b>	caulking between the metal panel <b>(Chrysotile 3%)</b>	0.1 fiber/cm <sup>3</sup>	Ca (ND)	Asbestosis (chronic exposure): dyspnea (breathing difficulty), interstitial fibrosis, restricted pulmonary function, finger clubbing; irritation eyes; [potential occupational carcinogen]	NA
<b>Arochlor 1254</b>	SS: > 0.8 ppm Sabino Hill Rake Tower	0.5 mg/m <sup>3</sup> PEL [skin]	Ca [5 mg/m <sup>3</sup> ]	Irritation eyes, chloracne; liver damage; reproductive effects; [potential occupational carcinogen]	UNK
<b>TPH-GRO</b>	SB 8,830 mg/kg B27-DP1	See below	See below	See below	NA
<b>Benzene</b>	Data unavailable	0.5 ppm	500 Ca	Eye, nose, skin, and respiratory irritation; headache; nausea; dermatitis; fatigue; giddiness; staggered gait; bone marrow depression	9.24
<b>Ethyl Benzene</b>	Data unavailable	100 ppm	800	Eye, skin, and mucous membrane irritation; headache; dermatitis; narcotic; coma	8.76
<b>Lead</b>	SS: 900 ppm Sabino Hill Rake Tower	0.05 mg/m <sup>3</sup>	100 mg/m <sup>3</sup>	Weakness lassitude, facial pallor, pal eye, weight loss, malnutrition, abdominal pain, constipation, anemia, gingival lead line, tremors, paralysis of wrist and ankles, encephalopathy, kidney disease, irritated eyes, hypertension	NA
<b>Toluene</b>	Data unavailable	20 ppm	500	Eye and nose irritation, fatigue, weakness, confusion, dizziness, headache, dilated pupils, excessive tearing, nervousness, muscle fatigue, paresthesia, dermatitis, liver and kidney damage	8.82
<b>Xylenes</b>	Data unavailable	100 ppm	900	Irritated eyes, skin, nose, and throat; dizziness; excitement; drowsiness; incoherence; staggering gait; corneal vacuolization; anorexia; nausea; vomiting; abdominal pain; dermatitis	8.56

Footnotes:  
<sup>a</sup> Specify sample-designation and media: SB (Soil Boring), A (Air), D (Drums), GW (Groundwater), L (Lagoon), TK (Tank), SS (Surface Soil), SL (Sludge), SW (Surface Water), SED (Sediment).  
<sup>b</sup> Appropriate value of PEL, REL, or TLV listed.  
<sup>c</sup> IDLH = immediately dangerous to life and health (units are the same as specified "Exposure Limit" units for that contaminant); NL = No limit found in reference materials; CA = Potential occupational carcinogen.  
<sup>d</sup> PIP = photoionization potential; NA = Not applicable; UK = Unknown.  
<sup>e</sup> Denotes a ceiling value (15 minutes) unless otherwise identified.  
<sup>f</sup> Denotes a value established by the ACGIH.  
<sup>g</sup> Denotes a value established by the ACGIH and a ceiling value (15 minutes).  
ppb Denotes sample concentration is in Parts per Billion unless otherwise noted.  
REL = NIOSH Recommended Exposure Limit  
PEL = Denotes OSHA Permissible Exposure Limit unless otherwise identified.  
Ca = Potential Occupational Carcinogen

**Note: For personnel performing the operations identified above, Level C PPE (full face APR) or Level B (Supplied Air Respirator) shall be utilized when Action Levels identified in section 6.0 of this HSP are exceeded.**

**In addition, information regarding worker and perimeter Exposure Monitoring for Benzene is included in section 6.1 of this HSP.**

### 3.8.2 Lead

As part of the execution of this CTO, the demolition/disposal of the former Sabino Hill Rake Station No. 1 (identified as Structure 558) will be required. Even though the Rake Tower is located approximately 14 miles southeast of the Naval Air Station Brunswick (NASB) Main Base, in Phippsburg, Maine (10 Perkins Farm Lane, Phippsburg, Maine) and is discontinuous from the NAS Brunswick NEX site, the work will be completed under this TO. As such, health and safety protocols associated with the components of this work will be addressed in this HSP.

For historical background information, the U.S. Navy acquired this 0.23-acre property in 1959 and built the Rake Tower. The Rake Tower was used by the Navy to observe and score the success of aircraft training missions performed off the coast. Currently, the 55-foot tall tower site is surrounded trees and brush. The tower is constructed of steel and sits on four concrete pilings; and the base of the tower is approximately 14-feet by 14-feet. The tower site is currently surrounded with a 6-foot metal cyclone fence. There are several private residences, a storage building for the Popham Beach State Park, and the Park office in relatively close proximity to the Rake Tower structure.

At this time, it is assumed that some limited asbestos abatement and lead based paint removal will be required to facilitate complete demolition of the of the Rake Tower in a manner that does not pose an asbestos or lead hazard to demolition workers. Procurement procedures have been set in motion by AGVIQ-CH2MHILL to secure subcontract forces to execute the demolition and subsequent lead paint removal or asbestos abatement activities which may be needed to allow for the demolition of the tower structure. It should be noted that all subcontractor demolition, asbestos abatement and lead paint removal plans and associated means and methods or worker exposure assessment procedures required for this demolition work will be prepared by the selected subcontractor and submitted for review, as necessary.

However, as part of the final remedy and restoration for this location, less than 100 cubic yards of lead impacted soil will be excavated and disposed once demolition activities have been completed, and it is for this activity that this lead exposure assessment and lead awareness information contained in this HSP will address.

Elevated lead concentrations (up to 900 mg/kg) have been identified in site soil in an around the base of the existing Rake Tower. During excavation, excavation confirmation sampling and management of lead impacted soil, potential dermal, incidental ingestion exposure or inhalation exposure vectors to lead impacted soil could exist if appropriate PPE is not utilized, proper personal hygiene procedures are not adhered to or soil is excavated in a dry condition and standard dust suppression measures are not executed.

However, worker inhalation exposure to lead impacted soil during the above activities is anticipated to be of low risk because of the time of year the work is anticipated to be performed (spring) and the soil to be excavated will likely be in a moist or potentially even wet condition. If work is executed in the summer, and the soil to be excavated is in a dry condition, then allowances for standard dust suppression (water application) must be implemented.

In general where worker exposure to lead from dermal, inhalation or ingestion pathways may occur during the performance of assigned duties, the following information shall be reviewed by site workers and implemented.

- All AGVIQ-CH2MHILL site personnel shall have participated in or received Lead Awareness Training, prior to engaging the excavation, management, sampling and or other operations which may potentially result in direct or indirect exposure to Lead.
- Work activities involving lead impacted soils should be treated as having a potential for lead exposure, unless it is ensured that appropriate Engineering, Administrative or PPE control measures are implemented.
- Do not enter controlled work areas unless training, medical monitoring, and PPE requirements established by this HSP have been met.
- Do not ever eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas.
- Do not launder work clothes exposed to conditions where lead impacted soil is possible with ordinary clothes.
- Respiratory protection and other exposure controls selection shall be based on the most recent exposure monitoring results obtained for the site.

### **3.8.3 Lead Awareness Information – General**

The following information is intended to provide general awareness information about the occurrences, characteristics, toxicity, exposure and labor regulations with regard to the presence of lead in the work environment.

#### **3.8.3.1 Uses And Occurrences**

Lead is a well-known naturally-occurring metal found in the earth's crust, often associated with silver and zinc. It has had a variety of uses since antiquity, but its greatest use today is in car batteries. It was formerly used in gasoline, water pipes, pottery glazes, solder, paint and as metal alloy. It currently has a variety of other uses such as radiation shielding, as vibration dampening material, in explosives, bullets, magnets, and in electronic equipment. It is also a common contaminant at hazardous waste sites. For this project, the confirmation of lead in the soil beneath and adjacent to the Rake Tower structure is most attributable to presence of lead bearing paint which has flaked off from the Rake Tower structure.

#### **3.8.3.2 Physical Characteristics**

Lead exist as the familiar soft, dull gray metal, as a white or red solid as lead oxide, a gray or black solid as lead sulfide (galena), a white solid as lead sulfate, all which are insoluble in

water. There are numerous other forms of inorganic lead. The organic forms, tetraethyl lead and tetramethyl lead, used in the past in fuels are flammable, colorless liquids also insoluble in water.

### 3.8.3.3 Toxicity and Hazards

Lead is a highly toxic substance that has a variety of adverse health effects from both chronic and acute exposure. An acute exposure to high levels of lead can cause a brain condition known as encephalopathy which can lead to death in a few days. The more common chronic exposure can also cause brain damage, blood disorders (anemia), kidney damage and damage to the reproductive system of both men and women and toxic effects to fetuses. Lead is stored in the bones and eliminated from the body very slowly.

Consequently, exposures to low levels over many years can cause these adverse health effects. Lead is toxic by inhalation and ingestion, but is not absorbed through the skin. Some common symptoms of chronic overexposure include loss of appetite, metallic taste in mouth, anxiety, insomnia and muscle and joint pain or soreness.

### 3.8.3.4 Regulations

Inorganic lead has been specifically regulated in general industry by OSHA since 1981 (29 CFR 1910.1025) and in construction (29 CFR 1926.62) since 1994. The 8-hour permissible exposure limit is 50 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ). There is no short term exposure limit. OSHA also specifies an action level of 30  $\mu\text{g}/\text{m}^3$ . These limits apply to both general industry and construction. Initial air monitoring must be done whenever there are indications of lead exposure above the action level. If the action level is not exceeded, air monitoring can cease. If the action level is exceeded, initial blood lead level monitoring must be made available. If exposed above the action level for more than 30 days in a year, medical surveillance must be provided which includes further blood lead level monitoring and a medical examination. If specified blood levels are exceeded, the employee must be removed from the job or task where lead exposure occurs. Training must also be provided. If the PEL is exceeded, engineering controls must be implemented to reduce exposure. If engineering controls are not feasible or ineffective, respirators must be provided and worn. Air-purifying respirators with high-efficiency (HEPA) filters can be worn when airborne levels are as high as 500  $\mu\text{g}/\text{m}^3$ . If levels exceed this amount, supplied air respirators must be worn. In addition, if the PEL is exceeded, OSHA requires the establishment of regulated areas, showers, change rooms, separate clean lunchrooms and warning signs. Regulated areas are demarcated from the rest of the workplace to limit access to authorized personnel who have received lead training. To enter a regulated area you must also wear protective clothing. Tetraethyl and tetramethyl lead each have separate PELs of 100  $\mu\text{g}/\text{m}^3$  and 150  $\mu\text{g}/\text{m}^3$  respectively, and are not covered under the inorganic lead regulation.

### 3.8.3.5 How Exposures Can Occur at Project Sites

Exposure to lead can occur at hazardous waste sites where lead is found in soil or groundwater and at old mining sites or former smelter sites. Exposure to lead-containing dust could occur during drilling, heavy equipment movement or other soil-disturbing activities. Dust formation can be minimized by wetting soils. Exposure could also occur during lead paint removal activities, during welding on metal surfaces with lead-containing

paint, or in project work in smelters, battery recycling or manufacturing plants or at some mines.

### 3.8.3.6 Additional Information

Persons working at hazardous waste sites with known high amounts in soils (3 percent or 30,000 ppm) should have blood lead draws taken before and after site work. Air sampling should be done during soil disturbing activities at the site. An individual working at non-hazardous waste site that has information or suspects they have been exposed to lead above the action level should contact a health and safety manager to determine if medical monitoring is needed or other regulatory requirements apply.

## 3.8.4 Lead Compliance

As part of as part of the final remedy and restoration for the Sabino Hill Rake Tower site, less than 100 cubic yards of lead impacted soil will be excavated and disposed once demolition activities have been completed. Previous site soil sampling activities and analysis has yielded results up to 900 mg/kg of total lead in the soil, but is less than the 5.0 mg/L (2.2 mg/L) Toxicity Characteristic Leachate Procedure (TCLP) limit which would make it a RCRA D008 characteristic waste for lead under the regulatory requirements of 40CFR263. It is anticipated that soil excavation to facilitate the objectives of this final remedy for this site will likely occur from 0 to 0.5 foot to 1.0 foot below ground surface (bgs) beneath and adjacent to the base of the Rake Tower.

This proposed lead impacted soil excavation will be performed in an open air, well ventilated environment and the excavated soil is anticipated to be in a "moist" state. Additionally, the average concentration of lead impacted soil across the subject site would be less than the maximum total lead concentration of 900 mg/kg. With these considerations in mind, it anticipated that the overall daily risk for site worker exposure to airborne lead particulate during soil excavation activities would be significant less than any established OELs.

This assumption is additionally supported by the use of formulas presented in "Action Levels for Hazardous Waste Site Work", Christopher S.E. Marlowe, February, 1997, which identifies the following:

*For jobsites with a single contaminant of concern (such as Lead), the following formula can be used to establish an exposure limit.*

$$EL_{mix} = \frac{(EL \text{ mg/m}^3)}{(\text{con g/g}) (\text{safety factor})} = \frac{(10^6 \text{ mg/Kg}) (EL \text{ mg/m}^3)}{(\text{conc. mg/Kg}) (\text{safety factor})}$$

Where:

$EL_{mix}$ : Air Concentration of total dust at which the contaminants of concern would be at their established exposure limit.

EL: Exposure limit of the contaminant of concern

$10^6$ : Conversion factor

conc.: Soil concentration of the contaminant in mg/kg

Safety factor: Confidence you have in your concentration information

Choose a Safety factor based on your judgment whether:

- The concentration of the contaminant of concern in the airborne dust is the same as its concentration soil.
- The soil concentration data depicts a representative worst case.
- The monitoring instrument used accurately reports the concentration of dust in air (a respirable dust monitor will under-report the concentration of total dust in air).
- You believe the laboratory analysis was properly performed.

If there is confidence that the data represent site conditions, use a safety factor of 2. If you have some confidence, use 4. If you have no confidence use 10 or 20. If you have no information about the quality of concentration information, use 10 at all times.

Therefore, using the above exposure calculation formula and guidance, with a maximum site total lead concentration in the soil identified at the Sabino Hill rake Tower site of 900 mg/kg and the OSHA Permissible Exposure Limit (PEL) of 0.05 mg/m<sup>3</sup>, the following can be determined:

$$EL_{\text{mix}} = \frac{(10^6 \text{ mg/Kg}) (EL \text{ mg/m}^3)}{(\text{conc. mg/Kg}) (\text{safety factor})} = \frac{(10^6 \text{ mg/Kg}) (0.05 \text{ mg/m}^3)}{(900 \text{ mg/Kg}) (4)} = 13.89 \text{ mg/m}^3$$

Note: A safety factor of 4 was used based on the following:

- The concentration of the contaminant of concern in the airborne dust would be significantly lower than identified maximum site concentration in soil, and the potential concentrations of lead in the soil is relatively well known.
- The maximum concentration of lead in the soil, at this time, depicts a representative worst case situation.
- The onsite aerosol air monitoring device identified in Section 6.0 of this HSP will measure total dust and not just respirable dust.
- The over-all average total concentration of lead in surface soil at the Sabino Hill site experienced by a worker during an 8-hour work shift would be less than 900 mg/kg, seeing that this is the maximum identified concentration at the subject site.

In the calculation above using a safety factor of 4, a maximum site lead concentration of 900 mg/kg and the 0.050 mg/m<sup>3</sup> OSHA PEL for lead, yields a particulate (dust) exposure limit of **13.89 mg/m<sup>3</sup>**. Therefore, when the ambient air contains **13.89 mg/m<sup>3</sup>** of total dust (particulate), it should not, under normal conditions, contain more than 0.05 mg/m<sup>3</sup> of lead (PEL).

Regardless of this concentration, worker respiratory protection would normally be required where the respirable fraction of "nuisance or inert dust" levels of **2.5 mg/m<sup>3</sup>** are experienced, in the worker breathing zone, which is 50 percent of the OSHA PEL (5 mg/m<sup>3</sup>). This standard action level to protect workers from exposure to nuisance or simple "uncontaminated" inert dust is significantly less than the calculated air borne dust exposure of 13.89 mg/m<sup>3</sup> containing up to 0.05 mg/m<sup>3</sup> of lead, generated by the complete disturbance of soil at the Sabino Hill Rake Tower site containing up to 900 mg/kg of lead. Therefore, respiratory protection would be routinely deployed well before an exposure of lead at the OSHA PEL by an exposed worker performing soil excavation operations.

To further assess potential site worker exposure during proposed lead impacted soil excavation activities, the OSHA Action Level (AL) for lead is substituted for the OSHA PEL

for lead. In this additional calculation, where the OSHA Action Level (AL) for Lead of 0.03 µg/m<sup>3</sup> is substituted in the exposure formula, the following result is yielded:

$$EL_{\text{mix}} = \frac{(10^6 \text{ mg/Kg}) (EL \text{ mg/m}^3)}{(\text{conc. mg/Kg}) (\text{safety factor})} = \frac{(10^6 \text{ mg/Kg}) (0.03 \text{ mg/m}^3)}{(900 \text{ mg/Kg}) (4)} = 8.33 \text{ mg/m}^3$$

This calculated exposure also verifies that if a standard *nuisance or inert dust* action level of **2.5 mg/m<sup>3</sup>** (or 50 percent of the OSHA PEL of 5 mg/m<sup>3</sup>) was established as the action level for workers to don respiratory protection against exposure to the respirable fraction of *nuisance or inert dust*, then neither the Lead OSHA PEL or AL would be exceeded for the proposed lead soil excavation activities at the Sabino Hill Rake Tower Site.

With both of the above calculations evaluated, if the project site total dust air monitoring AL is established at a conservative level of **1 mg/m<sup>3</sup>**, above background readings in a “clean” area, then exceedances of the OSHA Lead AL and PEL should not occur during soil removal and handling operations. As a result, the following air monitoring action levels will be established for this project, as identified in section 6.0, Air Monitoring of this HSP.

**Total Dust > 1mg/m<sup>3</sup> (sustained for 5 mins) = Execute Dust suppression Measures (water)**  
**Total Dust > 2.5 mg/m<sup>3</sup> (sustained for 5 mins or not controlled by dust suppression measures) = Level C PPE with P100 HEPA cartridges**

The above in combination with the application of water as standard dust suppression technique and provisions to upgrade to level C PPE (as may be required), in addition to the introduced overlapping safety factors and assumptions used in establishing this site dust monitoring action level, worker exposure to lead during the implementation of the Sabino Hill intrusive soil removal activities should not exceed the OSHA Lead PEL or AL, for an 8-hour work shift.

**In addition, information regarding worker and perimeter Exposure Monitoring for Lead is included in section 6.3 of this HSP.**

### 3.8.5 Potential Routes of Exposure

**Dermal:** Contact with contaminated media. This route of exposure is minimized through proper use of PPE, as specified in Section 5.0 of this HSP.

**Inhalation:** Contaminated vapors and particulates. This route of exposure is minimized through proper respiratory protection and air monitoring, as specified in Sections 5.0 and 6.0, respectively.

**Other:**

Inadvertent ingestion of contaminated media: This route should not present a concern if good hygiene practices are followed (e.g., wash hands/face before eating drinking or smoking).

Inadvertent injection of contaminated media: This route should not present a concern unless a puncture of contaminated PPE were to occur that resulted in breaking the employee’s skin and the wound came into contact with contaminated media.

### 3.8.6 Respiratory Protection

#### (Reference SOP # HSE&Q 121, Respiratory Protection)

For the individual tasks associated with the execution of the NAS Brunswick project, it is not anticipated that worker respiratory protection measures will be required except in the condition were the cleaning of the interior 21,000 gallons frac tanks must be cleaned prior to off-site demobilization or where particulate air monitoring results during soil excavation activities at the Sabino Hill Rake Tower site exceed **2.5 mg/m<sup>3</sup>**. **Respiratory protection may be required during tower demolition activities when asbestos containing materials (ACM) or lead based paint must be removed or cut during demolition, in accordance with the applicable OSHA asbestos or lead construction industry standard.** However, unanticipated site conditions may be encountered excavation dewatering or remedial soil excavation operations where the use of respiratory protective equipment may be required or advisable. Under these circumstances, it is essential that the following criteria are met:

- The correct type of respiratory protection equipment is selected and used.
- The selected respiratory protection equipment is clean and in good working order.
- The selected respiratory protection equipment provides an appropriate fit for the user/wearer.
- The user/wear is adequately trained in the use, care, and limitations of the selected respiratory protection device.

To accomplish these requirements, a Respiratory Protection Program must be implemented to facilitate reduction of employee exposure to toxic chemical agents, asbestos, lead based paint, and potentially hazardous work environments and to ensure employees are made aware of and familiar with, respirator use, fit, maintenance, cleaning procedures and associated application limits.

All site personnel who wear a respirator shall be given a medical evaluation prior to such use. A licensed physician must conduct the evaluation and provide written authorization for respirator use and the authorization must be included in the employee's permanent record. At a minimum, the medical evaluation must be repeated annually.

To ensure proper wearer fit, an annual "fit test" must be provided for a specific make, model, and size of a selected respiratory protection device. An additional fit test must be performed whenever the employee reports or the employer or employer's representative makes visual observations of changes in the employee's physical condition that could affect respirator fit. Such conditions include, but are not limited to, facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight. Fit tests will be repeated, at least, annually or sooner if there is any doubt as to a respirator's fit.

To minimize employee exposure to potentially hazardous chemical substances, the primary objective shall always be to achieve the needed control, whenever feasible, through engineering methods (such as exhaust ventilation) or administrative control. It is recognized, however, that for certain operations, the use of engineering controls may not be feasible or practical. Under these circumstances or during an interim period while

engineering controls are being developed or installed, the use of personal respiratory protection equipment may be necessary.

**Prior to using any respiratory protective equipment, affected personnel shall review and implement all applicable components of CH2M HILL SOP # HSE&Q-121, Respiratory Protection or implement other company Respiratory Protection Programs that may be more applicable to the employee.**

### 3.8.7 Chemical, Biological Radiological, or Nuclear Hazards and Controls

Hazards	Controls
Not Applicable	Not Applicable

## 3.9 Cranes

**(Reference SOP # HSE&Q 303, Cranes)**

At the time of preparation of this HSP, the project team has identified that a specialized crane subcontractor may be used for the purpose of facilitating the installation of the excavation sheeting system or for demolition of the Sabino Hill Rake Tower. In the instances where cranes and riggings are used at the project to execute the support material handling operations, the following shall be implemented.

- **For Crane and Rigging Operations associated with crane use and lifting operations, review and implement all applicable components of CH2MHILL SOP # HSE&Q-303, Cranes and CH2MHILL SOP # HSE&Q-316, Rigging.**
- **Review and implement NAVFAC P307- Management of Weight Handling Equipment. Ensure that form P-1 "Certificate of Compliance" is completed and posted on crane and form P-2 "Contractor Crane Operation Checklist" is also completed.**
- Crane operators will have current certification from the National Commission for the Certification of Crane Operators (NCCCO).
- The crane's operations manual and load chart specifically designed for the crane shall be on the crane at all times.
- The crane must have a current annual inspection to include load test certification (within the last 12 months) that meets all territory, federal and/or U.S. Army Corps of Engineers or OSHA safety standards. Documentation of this inspection must be available for review.
- A competent person will inspect the crane daily to ensure it is in safe operating condition.
- All rigging and crane hooks equipment must be inspected by a competent person prior to use for signs of excessive wear; equipment found to be damaged will be tagged and removed from service.
- A pre-lift meeting will be conducted to include all parties involved in that days crane operation.

- Only one person shall signal the crane operator. This person shall be thoroughly familiar with all of the cranes operation and be able to communicate with the crane operator with the appropriate hand signals.
- No personnel shall be permitted under the load at any time.
- Tag lines shall be attached to every load being made by the crane.
- The swing radius of the rear rotating superstructure (counterweight) of the crane shall be barricaded and no entrance allowed.
- No part of the crane will come within 10 feet of overhead electrical power lines rated 50 kV or less. Increased separation may be required for lines greater than 50 kV. See Electric Safety in this HSP for proper separation requirements and other safe operating procedures associated with working near power transmission lines.

### 3.9.1 Critical Lift

A Critical Lift Plan shall be prepared a crane competent person or designated lift supervisor and submitted to the Navy 15 calendar days prior to onsite work when the following conditions are determined to exist for on-site crane operations.

- Lifts over 75 percent of the capacity of the crane or hoist (50 percent of the capacity of a barge mounted mobile crane's hoist) at any radius of lift;
- Lifts involving more than one crane or hoist;
- Lifts of personnel;
- Lifts involving non-routine rigging or operation, sensitive equipment or unusual safety risks.

The critical lift plan shall show the following, as applicable:

- The size and weight of the load to be lifted, including crane and rigging components that add to the weight. The original equipment manufacturer's (OEMs) maximum load capacity for the entire range of the lift shall also be provided.
- The lift geometry, including the cranes position, boom length and angle, height of lift and radius for the entire range of the lift. Applies to both single and tandem crane lifts.
- A rigging plan, showing the lift points, rigging gear, and rigging procedures.
- The environmental conditions under which lift operations are to be stopped.
- For lifts of personnel, the plan shall show compliance with 29CFR1926.550(g).

## 3.10 Demolition/Dismantling

**(Reference SOP # HSE&Q 305, Demolition)**

As part of the execution of the TO, the Fuel Island must be demolished and properly disposed of or recycled. Before demolition of these structures may occur, an environmental survey must be conducted to identify any suspect Asbestos or OHM which must be abated or otherwise removed before the structures can be razed. All generated demolition material

must be characterized prior to offsite transportation to satisfy generator and end receiver requirements.

In addition to this activity, it is anticipated that the demolition of the Sabino Hill Rake Tower structure in Phippsburg, ME, will be engaged by specialized demolition subcontractors with applicable licenses and certification to perform asbestos abatement and lead abatement activities in accordance with OSHA, EPA and state requirements. **Specific means and methods, type and quantity of mechanical equipment that will be used and standard safety precautions associated with the Rake Tower demolition shall be identified by subcontractor work plans and submitted under separate cover, as necessary. The following specific means and methods will be addressed in the subcontractor's plans:**

**Mean and methods to sequentially demolish the Rake tower in a controlled demolition fashion by holding the tower component to be removed with an appropriately sized crane and rigging, cutting or shearing the tower component free, so that it may be safely lowered to the ground.**

**Means and methods for removing/abating ACM and LBP from that portion tower component to be cut on before removal.**

**Means and methods to provide safe access and fall protection during tower demolition activities.**

The information contained below is intended to provide a general understanding of typical demolition work practices applicable to anticipated site operations at NAS Brunswick in connection with the NEX Service Station UST and Soil Removal activities. These practices must be implemented by AGVIQ-CH2MHILL personnel (or AGVIQ-CH2MHILL controlled subcontractors) who are exposed to the hazards of demolition operations, regardless of the company responsible for the operation.

### **3.10.1 Planning**

Some local or state governments may require a demolition permit prior to beginning demolition operations. The applicability of securing demolition permits in relation to the execution of this project shall be evaluated by the project team.

Where securing a demolition permit is applicable, generally, in order to secure such permits or approvals to demolish structures, a complete building survey shall be completed prior to start of demolition operations. Typically, building surveys shall determine the following:

- Condition of the structure
- Confirmation of whether regulated materials such as ACM, mercury switches, PCB ballasts lead paint, or other regulated hazardous substances are present in or on the structure
- If hazardous materials are contained in tanks, pipes, and equipment associated with the structure to be demolished
- Evaluate the possibility of unplanned collapse of any portion of the structure

- Any adjacent structure where personnel may be exposed or impacted by proposed demolition operations shall also be similarly evaluated

The survey shall be conducted by a qualified person and a written record of the survey findings shall be maintained at the project site. An engineer's structural survey shall be required when where the integrity of the structure to be razed could be in jeopardy of damaging property, utilities or cause bodily harm to workers or the general public.

If regulated materials are identified to be in or on or in the structure to be razed, that could affect the overall disposal status of generated construction and demolition (C&D) waste, such materials shall be removed prior to demolition. All applicable regulations shall be followed including notification of proper authorities, waste generator and end disposal activities.

All tanks, pipes, and equipment shall be purged of hazardous wastes and materials prior to demolition. Appropriate control measures necessary to prevent injury or exposure to harmful substances or accidental release of such materials to the environment shall be established.

All electric, gas, water, steam, sewer, and other service lines shall be shut off, capped, or otherwise controlled outside the building line before demolition work is started. Any utility company involved shall be notified in advance. If it is necessary to maintain any power, water, or other utilities during demolition, such lines shall be temporarily relocated, as necessary, and protected. Detection equipment shall be provided to verify that electrical lines are de-energized.

- The following pre-planning conditions shall be evaluated as to the applicability to expected site demolition operations and implemented as necessary.
- Air monitoring instruments shall be provided if the potential for a hazardous atmosphere exists within the demolition location.
- High-visibility warning vests shall be worn when personnel are exposed to public vehicular traffic or when working in close proximity to heavy equipment.
- Fall protection shall be provided when personnel are exposed to a fall of 6 feet or greater. Lockout/tagout devices may be required for demolition that includes potentially energized systems.
- Adequate supplies of first aid materials and sanitary facilities shall be available at the work site.

### 3.10.2 Demolition Zone Procedures

- **Review and implement all applicable components of CH2MHILL SOP # HSE&Q-305 Demolition.**
- Remain a safe distance from the demolition zone to reduce exposure to fragmentation of glass, steel, masonry, and other debris during demolition operations.

- Do not enter the demolition zone unless completely necessary and only after the designated competent person has assessed the condition of the structure/ongoing demolition operations and has authorized entry.
- Follow all requirements established by the competent person. The competent person shall inform personnel of the areas that are safe to enter and the areas where entry is prohibited. Where the competent person authorizes access of demolition zone by non-essential personnel, these personnel must be escorted by the competent person.
- All demolition activities that may affect the integrity of the structure or safety of personnel must cease until personnel have exited the demolition zone.
- Stay as clear as possible of all hoisting operations. Loads shall not be hoisted overhead of personnel.
- Personnel shall wear the appropriate PPE. Minimum protection includes hard toed, sturdy work boots that provide sufficient ankle support, hard hats, safety glasses, cut resistant work gloves, high visibility clothing/reflective vests, hearing protection and face protection, as necessary. Safety shoe inserts that protect against punctures should be worn when demolition involves wood frame structures. Hearing protection may be needed when working in proximity to heavy equipment.

### 3.10.3 General Requirements

- Daily safety briefing/meetings and a task specific AHA shall be conducted with all site demolition personnel to discuss the work planned for the day and the HS&E requirements to be followed. The requirements of the Behavior Based Loss Prevention Program (BBLPS), in section 4.0 of this HSP, shall be implemented.
- Demolition equipment shall be inspected each day, before use, to ensure safe operational condition.
- The competent person shall inspect the demolition area as work progresses to detect hazards resulting from weakened or deteriorated floors, walls or loosened material. Personnel shall not be permitted to work in areas where such hazards exist until they are corrected by shoring, bracing, or other effective means.
- The competent person shall control entry into the demolition zone. Unauthorized entry shall be prohibited.
- Tanks, containers, piping or ducts that held or is contaminated with hazardous substances should be characterized, marked accordingly with non-toxic paint or markers (e.g., color coding), cleaned and removed prior to demolition. Waste streams must be properly segregated and managed. The following SOPs may be applicable to these tasks and should be referred during pre-demolition planning process stages.
  - CH2MHILL SOP # HSE&Q-413, Waste Management Planning
  - CH2MHILL SOP # HSE&Q-408, Waste Characterization, Sampling, and Analysis
  - CH2MHILL SOP # HSE&Q-409, Hazardous Waste Management
  - CH2MHILL SOP # HSE&Q-411, Non-Hazardous Waste Management

- Demolition of the UST canopy structure shall begin at the top and proceed downward. Each story of exterior wall and floor construction shall be removed and dropped into the storage space before commencing removal of the story below.
- **If there is a fire suppression system associated with the UST Canopy, it shall first be removed from the canopy prior to demolition.**
- An appropriate number (based on lateral extent of the work area) and type of fire extinguishers shall be available for use at the demolition area. See Fire Prevention details provided in the HSP for minimum requirements.
- Proper control measures shall be in place before cutting on surfaces covered by coatings containing flammable or hazardous materials such as lead, cadmium, zinc, etc. Highly flammable or toxic coatings may require stripping of the coating a sufficient distance from the area to be heated.

### 3.10.4 Protection of the Public

- Appropriate warning and instructional safety signs shall be conspicuously posted where necessary. In addition, a signalman shall control the movement of motorized equipment in areas where the public might be endangered.
- A temporary fence shall be provided around the perimeter of the demolition zone adjacent to public areas. Perimeter fences, where necessary, shall be at least 6 feet high. When a fence is adjacent to a sidewalk near a street intersection, at least the upper section of fence shall be open wire mesh from a point not over 4 feet above the sidewalk and extending at least 25 feet in both directions from the corner of the fence or as otherwise required by local authorities.
- Barricades, where required, shall be secured against accidental displacement and shall be maintained in place except where temporary removal is necessary to perform the work. During the period a barricade is temporarily removed for the purpose of work, a watch shall be placed at all openings.
- Fugitive dust must be controlled during demolition by using water sprays or other methods, as necessary to eliminate off-site migration of particulate.

### 3.10.5 Work Area Protection

- Where a hazard of falling through wall openings exists, the openings shall be protected by a standard guardrail 42 inches in height.
- Warning signs, barricades, and flagging shall be used to warn personnel of potential or hidden hazards or advise of intermittent activities that might endanger their safety. These devices are not to be used in lieu of more effective protection.
- Glass should be removed from the structure prior to demolition. If glass is not removed, personnel shall be protected from flying glass fragments by being under cover, remaining a safe distance away, or similar protective action.

### **3.10.6 Manual Removal of Walls and Masonry**

(Reserved)

### **3.10.7 Manual Removal of Floors**

(Reserved)

### **3.10.8 Demolition Using Heavy Equipment**

- Personnel shall not be permitted in any area that can be adversely affected by the operation of mechanical equipment or cranes.
- Refer to the Heavy Equipment and Rigging sections contained in this HSP for standard requirements for the operation of Heavy Equipment at AGVIQ-CH2MHILL project sites.
- Ensure that appropriate material handling/process equipment attachments are selected for demolition operations (hydraulic hammers, grapplers/claws, shears, pulverizers etc). Do not select equipment which is not appropriate for the task.
- If a “wrecking ball” is used in conjunction with track excavators for demolition operations, ensure that shackles, wire rope choker cables and other rigging can be sufficiently protected from damage and can be properly grasped by or affixed to a suitably sized, hydraulically operated track excavator with appropriate material handling attachments (i.e. grapples, pulverizer).

### **3.10.9 Material Chutes**

(Reserved)

### **3.10.10 Debris Storage and Disposal**

Debris contaminated with hazardous substances shall be segregated and managed in accordance with Federal, State and local laws governing the same. Most demolition debris can be transported and disposed at any construction and demolition (C&D) landfill or any municipal solid waste landfill that is permitted to accept C&D debris. C&D debris should be reduced whenever possible. Clean C&D debris, such as broken concrete (without protruding metal bars), metal, asphalt pavement may potentially be reused, but is dependant upon state or local regulations. Additionally, there are a number of C&D debris recyclers that will accept wood, aluminum and other metals, asphalt, concrete, and corrugated cardboard. If debris is known to contain hazardous substances, follow refer to CH2MHILL HSE&Q SOP # 409 (Hazardous Waste Management) to verify appropriate waste management procedures.

Storage space into which material is dumped should be blocked off, except for openings necessary for the removal of material. Such openings shall be kept closed at all times when material is not being removed.

### **3.10.11 Demolition Housekeeping**

- During the course of demolition, work areas, passageways, stairs, ladders, and exits shall be kept free of demolition debris.

- Demolition materials, tools, and equipment shall be placed in an orderly manner.
- Receptacles should be placed at appropriate locations for the disposal of miscellaneous trash.
- Air and water lines, electrical cords and cutting leads/hoses shall be positioned to eliminate tripping hazards.
- Burning of debris shall not be conducted on AGVIQ-CH2MHILL projects.

### 3.11 Drilling/Direct Push Technology

At this time it is not known if drilling activities will be required during the execution of this project. Drilling or Direct Push Technology (DPT) may be eventually required to collect additional confirmation samples or install additional ground water monitoring wells. Where it is identified that drilling operations may be required to facilitate the completion of the project, at a minimum, the following drilling practices must be implemented.

- Prepare and implement an AHA associated with the required drilling operations. At this time one is not prepared as it is not a specifically identified site task.
- Prior to conducting any onsite intrusive activities, it must be verified that subsurface utilities will not be impacted by proposed site operations. See Procedures for Locating Underground Utilities in this HSP.
- PPE and air monitoring requirements shall be executed in accordance with Sections 5.0 and 6.0, respectively, of this HSP in an effort to minimize potential dermal and respiratory exposures to identified site contaminants of concern during all drilling activities. In addition, good personal hygiene practices and procedures must be maintained (see section 7.0 of this HSP).
- Drill rig inspections and maintenance and documentation of such inspections and maintenance shall be performed daily prior to the start of onsite work.
- The drill rig is not to be operated in inclement weather.
- The driller is to verify that the drill rig is properly leveled and stabilized (extension of stabilizers on firm ground) before raising the mast.
- Personnel should be cleared from the sides and rear of the rig before the mast is raised.
- The driller is not to drive the rig with the mast in the raised position.
- The driller must check for overhead power lines before raising the mast. A minimum distance of 10 ft between mast and overhead lines (<50 kV) is recommended. Increased separation will be required for lines greater than 50 kV. See Electric Safety in this HSP for proper separation requirements and other standard operating procedures associated with working near power transmission lines.
- Personnel should stand clear before equipment startup. Maintain eye contact with operator prior to/while approaching drill rig.

- The driller is to verify that the rig is in neutral when the operator is not at the controls.
- Become familiar with the hazards associated with the drilling method used.
- Do not wear loose-fitting clothing, watches, etc., that may get caught in moving parts.
- Do not smoke or permit other spark-producing equipment around drill rig.
- The drill rig must be equipped with a kill wire or switch and personnel associated with the drilling operation are to be informed of its location.
- For drill rig where pressurized lines are associated with the operation, safety lashings/ whip line checks, clips or other suitable restriction means should be in place on hoses/connections to prevent injury in the event connections become dislodged or hoses ruptures.
- Be aware and stand clear of heavy objects that are hoisted overhead by the drill rig.
- The driller is to verify that all machine guards are in place while the rig is in operation.
- The drill rig should be equipped with at least one fire extinguisher.
- If the drill rig comes into contact with electrical wires and becomes electrically energized, do not touch any part of the rig or any person in contact with the rig and stay as far away as possible. Notify emergency personnel immediately.

Where it may be required to limit access and prevent inadvertent entrance of unauthorized and untrained personnel into the active drilling areas, the erection of warning tape, suitable signage, orange safety fencing or other appurtenances around the active drilling area maybe necessary.

## 3.12 Electrical Safety

**(Reference SOP # HSE&Q 206, Electrical Safety)**

Several types of electrical hazards may be encountered during the execution of the project. These hazards might include, but not be limited the following:

- use of generators, power cords, and electric hand tools during site operations identified herein,
- during inadvertent contact of operating earthmoving, haul truck or crane equipment with overhead or underground electrical or communication utilities or aboveground transformer units during excavation or sheet pile installation operations
- during the relocation of identified electric utilities to facilitate remedial excavation operations or the installation of the sheeting system
- the demolition of the UST canopy structure

Where electrical exposure hazards are possible in the work environment, the following standard work practices must be implemented.

- **Review and implement all applicable components of CH2M HILL SOP # HSE&Q-206, Electrical Safety.**
- Do not connect electric sampling or groundwater well purge equipment directly to 12 volt vehicle/tractor/boat batteries as an electrical power source. Use generators and power cords equipped with ground fault circuit interrupters (GFCIs)
- Only qualified personnel (by training, experience, and/or licensure) are permitted to work on electrical systems.
- Do not tamper with or access electrical wiring and equipment unless qualified to do so. All electrical wiring and equipment must be considered energized until hazardous energy control procedures (i.e., lock-out/tag-out) are implemented.
- Inspect electrical equipment, power tools, and extension cords for damage prior to use. Do not use defective electrical equipment and remove from service.
- All temporary wiring, including extension cords and electrical power tools, must have GFCIs installed.
- Extension cords must be:
  - Equipped with third-wire grounding.
  - Covered, elevated, or protected from damage when passing through work areas.
  - Protected from pinching if routed through doorways.
  - Not fastened with staples, hung from nails, or suspended with wire.
- Electrical power tools and equipment must be effectively grounded or double-insulated and Underwriters Laboratory (UL) approved.
- Operate and maintain electric power tools and equipment according to manufacturers' instructions.
- Protect all electrical equipment, tools, switches, and outlets from environmental elements.
- Maintain safe clearance distances between overhead power lines and operating heavy equipment and haul trucks unless the power lines have been verified as being de-energized and grounded or where insulating barriers have been installed to prevent physical contact. To determine proper clearance from energized overhead electric lines, please consult the reference table below.

Nominal System Voltage (kV)	Minimum Rated Clearance (feet)
0-50	10
51 - 200	15
201 - 300	20
301 – 500	25
501 – 750	35

- Do not swing heavy equipment or other components of operating heavy equipment toward overhead utilities. Do not allow haul trucks operators to raise dump bed bodies underneath overhead utilities or haul trucks to pull toward overhead utilities with dump bodies raised.
- Be cognizant of utility pole guy wires in relation to operating heavy equipment and haul trucks.

### 3.13 Excavation Activities

#### (Reference SOP # HSE&Q 307, Excavation & Trenching Safety)

Excavation operations will be engaged to facilitate the planned removal of UST's, support the installation of the excavation sheeting system and to remove soil impacted by TPH-GRO in excess of 200 mg/kg or above. In addition to the TPH-GRO remediation activities at the NEX gas station site, limited excavation activities will be performed at the Sabino Hill Rake Tower site in Phippsburg, ME to excavate and dispose of soil impacted by lead that is excess of the clean-up standard established for this site.

Prior to starting excavation activities, the applicability of 29 CFR 1926, Subpart P, and EM 385 1-1, Section 25, Excavations shall be evaluated. At a minimum, the following procedures must be evaluated and executed as part of proposed site excavation operations.

- **Review and implement all applicable components of CH2MHILL SOP # HSE&Q-307, Excavation & Trenching Safety.**
- Prior to opening an excavation, underground installations (i.e., utilities, fuel lines) shall be located and protected from damage or displacement. Utility companies (utility owners) and other responsible authorities shall be contacted to locate and mark the locations and, if they so desire, direct or assist with protecting the underground installations. When required, the AGVIQ-CH2M HILL or designated subcontractor shall obtain a "Dig Permit" or "Excavation Permit" from the NAS Brunswick designated point of contact (POC) having jurisdiction prior to initiation of and excavation work. See the "Procedures for Locating Buried Objects/Utilities" contained in this HSP for additional information.
- When personnel will be in or around and excavation, a competent person shall inspect the excavation, adjacent areas, and protective systems daily, as needed throughout the work shifts and after every rainstorm or other hazard-increasing event. If evidence of a situation that could result in possible cave-ins, slides, failure of protective systems, hazardous atmospheres, or other hazardous condition is identified, exposed workers shall be removed from the hazard and all work in the excavation stopped until necessary safety precautions have been implemented. The competent person is also required to monitor and inspect equipment use in water removal operations (i.e. pump systems). Documentation of excavation inspections must be available on site at all times.

A competent person is defined as:

- An individual who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees and who has authority to take prompt corrective measures to eliminate them. The competent person should be an individual designated by the employee's respective employer.
- Excavated material shall be placed at least 2 feet. (0.6 meter) from the edge of excavation or greater distance as necessary to prevent excessive loading (and potential collapse) of the excavation face(s).
- Sloping and benching configurations less than 20 feet in depth shall be in accordance with 29 CFR 1926.652(b) or EM 385 1-1, section 25.C, which ever is more stringent.
- The installed excavation sheeting system shall be in accordance with the project design drawings contained in the Remedial Action Work Plan and the selected excavation sheeting subcontractors final design drawings. These final design sheeting drawings shall be stamped by a registered professional engineer, with jurisdiction or reciprocal jurisdiction in the State of Maine.
- Where the use of support systems, shields or other protective systems is determined to be necessary, the design of said systems shall be in accordance with 29CFR1926.652(c) or shall be in EM 385 1-1, section 25.C, which ever is more stringent.
- Special Excavation Requirements defined by 29 CFR 1926.651 shall also be evaluated prior to the start of site excavation activities.
- AGVIQ-CH2M HILL personnel must notify and be granted authorization from the excavation-competent person prior to entering any excavation. AGVIQ-CH2M HILL personnel must follow all excavation requirements established by the competent person. A competent person is an individual who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees and, who has authority to take prompt corrective measures to eliminate them. The competent person must be a person designated by the AGVIQ-CH2M HILL.
- The competent person must inspect the excavation every day and after every hazard increasing event. Documentation of this inspection must be available on site at all times.
- Prior to excavating at a location, buried utilities in the area must be identified. Refer to "Procedures for Locating Buried Utilities", included in this HSP.

AGVIQ-CH2M HILL personnel must not enter any excavation where protective systems are deficient at any time, for any reason. The competent person must be notified of such conditions.

When excavations are not filled in after their intended use or are left open and/or unattended at any time and assuming that 1) excavations are not exposed to the public, vehicles or equipment and 2) employees are not routinely exposed to (open) excavations and excavations are not greater than 6 feet, then the excavations shall be protected by warning barricades or flagging placed at a distance not closer than 6 feet from the edge of

the excavation. Installed warning barricades need to display an adequate warning at an elevation of 3 feet above ground level.

It is understood that soil excavation to be engaged at the Sabino Rake Tower site will be limited to excavation to a depth of approximately 1' bgs and therefore the full and complete implementation of 29 CFR 1926, Subpart P, and EM 385 1-1, Section 25, Excavation may not be applicable. For this work, stormwater run-off to and from this excavation area must be controlled by berming or other equivalent methods, the excavation must be inspected by the competent person and open excavations must still be protected to the extent applicable (i.e. Perimeter Protection III).

## 3.14 Fall Protection

(Reference SOP # HSE&Q 308, Fall Protection)

The only anticipated protect hazards associated with a fall from an elevated surface would be those operations supporting excavation operations, installation of the excavation sheeting system, during the monitoring of dewatering operations or where personnel are required to climb up stair way systems connected to 21,000 gallon frac tanks. The fall protection guidelines contained herein are intended to provide general awareness to Fall protection requirements that may be associated with the executed site work. **All personnel who may be potentially exposed to falls from elevated surfaces (including leading edge of excavations) must review and implement all applicable components of CH2MHILL SOP # HSE&Q 308 Fall Protection.**

### 3.14.1 Surfaces or Activities Requiring Fall or Falling Object Protection

The following conditions define situations where fall protection measures shall be required.

- **Unprotected sides or edges** - Personnel exposed to sides or edges of a walking or working surface more than 6 feet above the adjacent surface, and without a minimum 39" high wall or guardrail system shall be protected by a guardrail system, safety net system, personal fall arrest system or fall protection plan.
- **Leading edges** - Personnel exposed to an edge of a walking or working surface under construction that changes location as additional materials are placed or constructed shall be protected by a guardrail system, safety net system, personal fall arrest system, or fall protection plan.
- **Holes** - Any gap or void 2" or more in its least dimension in a walking or working surface shall be provided with a cover, guardrail system, or personal fall arrest system.
- **Walking or working on surfaces not otherwise addressed** - Personnel exposed to falls from surfaces not specifically addressed here shall be protected by a guardrail system, or fall protection plan.

### 3.14.2 Guardrail Systems

A guard rail system means a barrier erected to prevent employees from falling to lower levels and must be constructed in accordance with the requirements of 29CFr19126.502. If

guard rails systems are selected as a fall protection device the following requirements must be met.

- Personnel shall remain within the guardrail system. Leaning over or stepping across a guardrail system shall not be permitted.
- Personnel shall not stand on objects (boxes, buckets, etc.) or ladders to increase working height on top of platforms protected by guardrails.
- Top-edge height of top rail shall be 39 to 45 inches above the walking or working level.
- Mid-rails, screens, mesh, intermediate vertical members shall be installed between the top rail and the walking or working surface.
- The guardrail system shall be capable of withstanding a force of at least 200 pounds applied in any outward or downward direction.
- **Specific requirements for guardrail construction and use can be found in H&S SOP HSE-308.**

### 3.14.3 Personal Fall Arrest Systems

For AGVIQ-CH2MHILL site operations a Personal Fall Arrest System at a minimum shall consist of a full body harness, a lanyard type deceleration device, lifeline, or suitable combinations, and anchorage point. Where it is required that personal fall arrest systems must be utilized to protect workers from a fall from an elevated surface, at a minimum the following must be implemented.

- Personnel shall inspect all personal fall arrest system components prior to each use for signs of wear damage and other deterioration. Personnel shall not use damaged fall protection components or systems at any time or for any reason and must be immediately removed from service.
- Personal fall arrest systems shall be configured so that individuals can neither free-fall more than 6 feet or contact any lower level.
- Limit maximum arresting force on an employee to 1,800 pounds when used with a body harness.
- Snaphooks shall be sized to be compatible with the member to which they will be connected, or shall be of a locking configuration. Unless the snaphook is a locking type and designed for the following connections, they shall not be engaged (a) directly to webbing, rope, or wire rope; (b) to each other; (c) to a dee-ring to which another snaphook or other connector is attached; (d) to a horizontal lifeline; or (e) to any object incompatible in shape or dimension relative to the snaphook, thereby causing the connected object to depress the snaphook keeper and release unintentionally.
- Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet.
- Personal fall arrest systems shall only be attached to anchorage points capable of supporting at least 5,000 pounds.

- Personal fall arrest systems shall not be attached to guardrail systems or hoists.
- Personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used again for fall protection until inspected and determined by a qualified person to be undamaged and suitable for reuse.

### 3.14.4 Protection from Falling Objects

- Personnel exposed to falling objects shall be required to wear hardhats.
- Objects on elevated surfaces shall be positioned far enough away from the surface's edge to prevent those objects from falling over the edge if accidentally displaced.
- In addition to hard hats and object positioning, at least one of the following protective measures shall be implemented to prevent falling objects:
  - Erect toe boards, screens, or guardrail systems that prevent objects from falling to lower levels.
  - Barricade the area where objects could fall and prohibit entry into the barricaded area.
  - Toe boards, when used as falling object protection, shall be erected along the edge of the overhead walking or working surface for a distance sufficient to protect personnel below. Toe boards shall be a minimum of 3 1/2" in height and shall have not more than a 1/4 inch clearance above the walking or working surface. They shall be solid, or have openings not over 1 inch in greatest dimension.
  - Where tools, equipment, or materials are piled higher than the top edge of a toe board, paneling or screening shall be erected from the walking or working surface or toe board to the mid rail or top rail, for a distance sufficient to protect personnel below.
  - Guardrail systems, when used as falling object protection, shall have all openings small enough to prevent passage of potential falling objects.
  - During the performance of overhand bricklaying work, no materials or equipment except masonry and mortar shall be stored within 4 feet of the working edge; and excess mortar, broken or scattered masonry units, and all other debris shall be kept clear from the work area by removal at regular intervals.
  - During the performance of roofing work, materials and equipment shall not be stored within 6 ft of a roof edge unless guardrails are erected at the edge; and materials that are piled, grouped, or stacked near a roof edge shall be stable and self-supporting.
  - Canopies, when used as falling-object protection, shall be strong enough to prevent collapse, and prevent penetration by any objects that may fall onto the canopy.

### 3.14.5 General Fall Protection Evaluation

- Fall protection systems must be used to eliminate fall hazards when performing construction activities at a height of 6 feet or greater and when performing general industry activities at a height of 4 feet or greater.

- Staff exposed to fall hazards must complete the AGVIC/CH2M HILL Protection training course and receive project-specific fall protection training. Do not use fall protection systems on which you have not been trained.
- The Site Supervisor, or other qualified designee, shall act as competent person and shall inspect and oversee the use of fall protection systems. Follow all requirements established by the competent person for the use and limitation of fall protection systems.
- A registered professional engineer shall oversee the use of horizontal lifelines.
- Only one person shall be simultaneously attached to a vertical lifeline.
- Use fall protection equipment for fall protection only and not to hoist materials. Do not use personal fall arrest systems that have been subjected to impact loading.

### 3.15 Fire Prevention

The information provided below is the minimum Fire Prevention procedures that must be engaged for the project site.

- Be cognizant of and adhere to any specific NAS Brunswick (or Phippsburg, ME) Fire Prevention Procedures and Requirements.
- For any Hot Work operations (welding, cutting, heat or spark producing) secure a “hot work permit” from the designated NAS Brunswick (or Phippsburg, ME) Fire Prevention Official. This task shall be the responsibility of the AGVIQ-CH2M HILL Site Supervisor or SSHO. The AGVIQ-CH2M HILL Site Supervisor or SSHO shall review established hot work procedures and appropriate emergency contact requirements with the designated NAS Brunswick (or Phippsburg, ME) Fire Prevention Official and review this information with all site AGVIQ-CH2M HILL and applicable Subcontractor personnel.
- Before conducting any hot work operations, the area shall be surveyed to ensure it is free of the following hazards:
  - Proximate combustible materials,
  - The presence or possible generation of potentially explosive atmospheres (flammable gases, vapors, liquids, or dusts); and
  - The presence or nature of an oxygen-enriched atmosphere.
- All flammable or combustible materials from where welding, cutting or other hot work operations are to occur shall be removed to the extent possible.
- Institute the “Hierarchy of Fire Control”. Objects to be welded, cut, or heated shall be:
  - Moved to a location free of dangerous combustibles;
  - If the work cannot be moved, all moveable fire hazards in the vicinity shall be taken to a safe place (moved at least 35 feet (10.6 meters) horizontally from the welding or cutting area) or the combustible material and construction shall be protected from the heat, sparks, and slag of welding;

- When welding or cutting must be done in a location where combustible or flammable materials are located, inspection and authorization by NAS Brunswick (or Phippsburg, ME) shall be required before such operations are begun (the location shall be checked for latent fires by qualified fire watch personnel after the work is completed).
- Only smoke in designated areas, where allowed at all. Designated area must be free of combustible, flammable or potentially explosive materials.
- Flammable/combustible liquids must be kept in approved containers, and must be stored in an approved storage cabinet. Use only metal safety cans for storage and transfer of fuel and use funnels and nozzles during fueling operations.
- Fire extinguishers will be provided so that the travel distance from any work area to the nearest extinguisher is less than 100 feet. When 5 gallons or more of a flammable or combustible liquid is being used, an extinguisher must be within 50 feet. Extinguishers must:
  - Be maintained in a fully charged and operable condition.
  - Be visually inspected each month.
  - Undergo a maintenance check each year.
  - The area in front of extinguishers must be kept clear.
  - Appropriately sized, easily accessible ABC fire extinguisher in work area. Fire extinguishers must be inspected monthly (inspection tag) and have an annual maintenance/inspection certification (tag) attached to the extinguisher.
  - Fire extinguishers shall be approved by a nationally recognized testing laboratory and labeled to identify the listing and labeling organization and the fire test and performance standard that the fire extinguisher meets or exceeds.
- Combustible materials stored outside should be at least 10 feet from any building.
- Solvent waste and oily rags must be kept in a fire-resistant, properly labeled covered container until removed from the site.
- Personnel shall consider their safety when engaging only incipient stage fires. Fires resulting from residual product in lines or tanks should be handled by Fire and Emergency Services.
- Post “Exit” signs over exiting doors (temporary facilities) and post “Fire Extinguisher” signs over extinguisher locations.

### 3.15.1 Fire Watch

In any instance where flammable or combustible materials have been exposed to fire hazards (such as welding operations, hot metals, or open flame), a fire watch shall be assigned to remain at the location for at least one (1) hour after the exposure has ended. These instances may include, but not be limited to the following;

- Slag, weld splatter, or sparks might pass through an opening and cause a fire.

- Fire-resistant guards or curtains are not used to prevent ignition of combustible materials on or near decks, bulkheads, partitions, or overheads.
- Combustible material closer than 35 feet (10.7meters) to the hot work in either the horizontal or vertical direction cannot be removed, protected with flame-proof covers, or otherwise shielded with metal or fire-resistant guards or curtains.
- The hot work is carried out on or near insulation, combustible coatings, or sandwich-type construction that cannot be shielded, cut back, or removed, or in a space within a sandwich type construction that cannot be inerted.
- Combustible materials adjacent to the opposite sides of bulkheads, decks, overheads, metal partitions, or sandwich-type construction may be ignited by conduction or radiation.
- The hot work is close enough to cause ignition through heat radiation or conduction on the following:
  - Insulated pipes, bulkheads, decks, partitions, or overheads
  - Combustible materials and/or coatings
- The work is close enough to unprotected combustible pipe or cable runs to cause ignition.
- The host government facility policy, facility fire prevention or other agency requires that a fire watch be posted.

### 3.16 Flight Line Safety

(Reserved)

### 3.17 Hand and Power Tools

**(Reference SOP # HSE&Q 210, Hand and Power Tools)**

Hand and power tools may be during the support of mobilization operations, the installation of required Erosion and Sediment Control Measures, during utility relocation operations as well as during the installation of the excavation sheeting system or any planned drilling or sampling operations. When the use of hand and power tools is necessary to properly complete assigned tasks, the following work practices must be implemented, where applicable.

- **Review and implement all applicable components of CH2M HILL SOP # HSE&Q 210, Hand and Power Tools.**
- Tools will be inspected prior to use, and damaged tools will be tagged and removed from service.
- Hand tools will be used for their intended use and operated in accordance with manufacturer instructions and design limitations.

- Maintain all hand and power tools in a safe condition.
- Do not set power tools down in muddy or wet areas, which may damage the tool and/or or create a potential for electric shock.
- Use PPE (such as gloves, safety glasses, earplugs, and face shields) when exposed to a hazard from a tool.
- Do not carry or lower a power tool by its cord or hose.
- Portable power tools will be plugged into GFCI-protected outlets.
- Portable power tools will be UL listed and have a three-wire grounded plug or be double insulated.
- Disconnect tools from energy sources when they are not in use, before servicing and cleaning them, and when changing accessories (such as blades, bits, and cutters).
- Safety guards on tools must remain installed while the tool is in use and must be promptly replaced after repair or maintenance has been performed.
- Store tools properly in a place where they will not be damaged or come in contact with hazardous materials.
- If a cordless tool is connected to its recharge unit, both pieces of equipment must conform strictly with electrical standards and manufacturer's specifications.
- Tools used in an explosive environment must be rated for work in that environment (that is, intrinsically safe, spark-proof, etc.).
- When using a knife or blade tool, stroke or cut away from the body with a smooth motion. Be careful not to use excessive force that could damage the tool, the material being cut, or unprotected hands.
- Working with manual and pistol-grip hand tools may involve highly repetitive movement, extended elevation, constrained postures, and/or awkward positioning of body members (for example, hand, wrist, arm, shoulder, neck, etc.). Consider alternative tool designs, improved posture, the selection of appropriate materials, changing work organization, and sequencing to prevent muscular, skeletal, repetitive motion, and cumulative trauma stressors.

### 3.17.1 Knife Use

Knives (fixed/utility) shall not be used. If it is demonstrated that a knife is the right tool for the job, this plan will be amended and the activity that knife use will be used for shall be reviewed. An AHA shall also be developed to address hazards and subsequent controls, PPE, and training.

#### 3.17.1.1 Responsibilities

- Supervisors with assistance from the FTL/SSHO are responsible for funding and ensuring the correct tool is being used, employees wear the proper PPE when using knives, and they have reviewed this policy.

- Employees are responsible for having and utilizing the proper PPE while performing an activity requiring the use of a knife. Employees are also responsible for understanding the proper use of a knife.

### 3.17.1.2 Glove Requirements

- In general, Kevlar cut resistant gloves are to be worn when using a knife in an occupational setting.
- Other types of gloves may be required and will be identified within the AHA/written procedure. Example - Leather gloves may be worn when using the acetate sleeve cutter.

### 3.17.1.3 Standard Control Measures for Knife Use

- All employees that will use a knife must be trained in the proper use.
- When using a knife always cut away from yourself.
- Many tasks using a utility knife require a knife edge but not a sharp point. For these tasks you can add protection against puncture wounds by using a rounded-tip blade.
- If you use a folding knife, it must be a locking blade type.
- Never use a knife that will fold under pressure.
- If you use a fixed blade knife, make sure there is a handle guard to keep your hand from slipping forward. Also, make sure the handle is dry and non-greasy/slippery to assure a better grip.
- When cutting, make the force of the cut carry the blade away from any part of your body. If you have a peculiar situation where this is not possible, protect yourself with a leather apron, or other material placed between you and the blade. Consider putting the material to be cut in a vise, or other holding device.
- If you carry a fixed blade knife, use a sheath or holder.
- Store utility knives safely, retract the blade or sheath an open blade before storing. Never, leave a knife with the blade exposed on the floor, on a pallet, on a work surface, or in a drawer or cabinet.
- Keep your knife sharp. A dull blade requires you to use more force to cut, and consequently increases the risk of slip or mistake.
- Knives used on the job, but not carried with you, must be properly stored when not in use.
- Never use a defective knife.
- Utility knife blades are brittle and can snap easily. Don't bend them or apply side loads to them by using them to open cans or pry loose objects. Use the knife only to cut. It was not designed to work as a pry bar, screw driver, hole punch, and other assorted things that make it seem so easy.

- **Stay focused on the cutting job.** It only takes a second of inattention with a sharp blade to produce a serious cut. Letting the mind wander or talking with others while using a knife greatly increases the risk of an accident and injury. If you are interrupted while working with a knife, stop cutting, retract the blade, and place the knife down on a secure surface before dealing with the interruption. You should never continue cutting while distracted! As always, utilize the hierarchy of controls and first attempt to engineer out the hazard and frequently ask ourselves do we have the right tool for the job.
- If you do get cut, seek medical attention to treat the injury and notify your supervisor. **For CH2M HILL employees** injured on the job, contact WorkCare at 866-893-2514 for assistance with the management of the injury. \*For work-related injuries or illnesses to CH2M HILL personnel, inform the AGVIQ-CH2M HILL Project Manger (overall) and the AGVIQ-CH2M HILL HSPA/CIH and help Human Resources administrator complete a HITS (Hours & Incident Tracking System) Form. HITS must be completed within 24 hours of incident.
- **For AGVIQ employees** who are injured at work, see the closest qualified medical facility for medical attention notify your supervisor and the Human Resource office for injury management assistance. See Sections 10.3, 10.7 and **Attachment 11** of this HSP for additional information.

#### 3.17.1.4 Examples of Preferred Tools and Kevlar Cut Resistant Gloves



A safety spring provides for automatic blade "shoot-back" into the handle when contact with cutting surface is lost

### 3.18 Haul Trucks

It is anticipated that the use of haul trucks will be limited to the delivery of products or materials to be incorporated into the project (i.e., aggregate, common fill, sheeting), delivery and pick-up of heavy equipment or materials to be utilized in the execution of the project or for the transportation of contaminated soil or C&D material to offsite disposal or recycling facilities. Where haul trucks are utilized on the project, the following standard work practices shall be implemented.

- **All haul trucks must follow the designated Haul Route established for the NAS Brunswick project and as defined by the project Remedial Action Work Plan.**
- Haul truck operators should be familiar with their equipment and inspect all equipment before use.
- Haul truck operators should ensure all persons are clear before moving their equipment. Before moving, operators should sound horn or alarm. All haul truck equipment should be equipped with an operational backing alarm.
- Haulage trucks or equipment with restricted visibility should be equipped with devices that eliminate blind spots. Alternatively Haul Route drivers should be provided with spotters where there are blind spots associated with loading or off-loading operations.
- Employees should stay off haul roads. When approaching a haul area, employees should make eye contact and communicate their intentions directly with the equipment operator.
- If possible, consider eliminating a designated haul route that includes steep grades.
- Trucks are to be operated within the manufacturer's recommendations.
- Haul roads should be well lit, sufficiently wide to allow for the passage of trucks.
- Haul roads should have adequate right-of-way signs indicating haul directions, where appropriate.
- Haul trucks should be loaded evenly for proper weight distribution and on stable competent ground.
- Stay out of the operating envelop of haul trucks. Do not walk in front of or in back of haul trucks. Ensure you are in the haul truck operator's field of vision. Ground personnel shall not be within a haul trucks "flip-over radius" when off-loading delivered fill or aggregate materials.
- Haul truck operators shall not be allowed to raise the dump bodies of their hauling vehicles underneath or within 10 feet of Overhead utilities. See Electric Safety in this HSP for proper additional separation requirements when working near power transmission (electric) lines.

## 3.19 Heavy Equipment

### (Reference SOP # HSE&Q 306, Earth Moving Equipment)

It is anticipated that heavy equipment may be utilized on virtual all phases of this project but will be integral in excavation and backfilling operations, soil loading activities and during the installation of the excavation sheeting system. The following work procedures shall be exercised by AGVIQ-CH2M HILL or subcontract personnel who may be designated to operate site heavy equipment.

- AGVIQ-CH2M HILL authorizes only those employees qualified by training or previous experience to operate heavy equipment.
- Where applicable, an Earthmoving Equipment Operator Evaluation Form will be completed and maintained in the project files by the SSHO for all persons who operate equipment (**Attachment 3**).
- Equipment must be checked at the beginning of each shift to ensure the equipment is in safe operating condition and free of apparent damage. The check should include: service brakes, parking brakes, emergency brakes, tires, horn, back-up alarm, steering mechanism, coupling devices, seat belts and operating controls. All defects will be corrected before the equipment is placed in service.
  - Documentation of this inspection must be maintained on-site at all times.
  - Refer to the Earthmoving Equipment Inspection Form found in **Attachment 3** of this document.
- Equipment must be on a stable foundation such as solid ground or cribbing; outriggers are to be fully extended.
- Seat belts shall be used by all personnel operating AGVIQ-CH2M HILL equipment.
- Equipment must not be used to lift personnel; loads must not be lifted over the heads of personnel.
- Equipment, or parts thereof, which are suspended must be substantially blocked or cribbed to prevent shifting before personnel are permitted to work under or between them. All controls will be in a neutral position, with the motors stopped and brakes set.
- Equipment that is operating in reverse must have a reverse signal alarm distinguishable from the surrounding noise or a signal person when the operator's view is obstructed.
- When equipment is used near energized power lines, the closest part of the equipment must be at least 10 feet from power lines < 50 kV. Provide an additional 4 feet for every 10 kV over 50 kV. A person must be designated to observe clearances and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means. All overhead power lines must be considered to be energized until the electrical utility authorities indicate that it is not an energized line and it has been visibly grounded.
- Underground utility lines must be located before excavation begins; "Procedures for Locating Buried Utilities" contained in this HSP for additional information.

- Operators loading/unloading from vehicles are responsible for seeing that vehicle drivers are in the vehicle cab or in a safe area.
- The parking brake will be set whenever equipment is parked; wheels must be chocked when parked on inclines.

When heavy equipment is not in operation, the blade/bucket must be blocked or grounded; the master clutch must be disengaged when the operator leaves the cab. When equipment is unattended, power must be shut off, brakes set, blades/buckets landed and shift lever in neutral.

## 3.20 Land Clearing Operations - General

(Reserved)

### 3.20.1 Land Clearing Via Hydraulic Mowing

(Reserved)

### 3.20.2 Brush/Sapling Clearing – Chainsaws/Brushcutters

(Reserved)

### 3.20.3 Land Clearing - Tree Felling via Chainsaws

(Reserved)

## 3.21 Lock-Out/Tag-Out

**(Reference SOP # HSE&Q 310, Lock Out Tag Out)**

In general, Lock-out/Tag-out (LOTO) activities for this task order are anticipated to be primarily focused on the mechanical and or electrical isolation of the UST system lines, valves and/or fuel pump systems or electrical power sources associated with the Fuel Island and UST's or site utilities that require relocation to facilitate the remedial objectives for the site. These isolations must be executed by AGVIQ-CH2M HILL or their designated subcontractors to reduce the potential for accidental discharge of mechanical and electric energy which may be stored in these systems.

Implementation of LOTO processes are also important to minimize the potential for the discharge of existing residual liquids contained within the former fuel system or fluids/rinse water generated during the cleaning process to the general work area or sensitive environmental receptors. To complete this activity, mechanical and or electrical isolation of UST pumps and fuel lines, and/or electrical sources shall be required, especially before any system cleaning, demolition/decommissioning occurs. LOTO processes are also applicable to the scheduled relocation of overheads or underground utilities.

Where Lock-out/Tag-out activities are must be enacted for proper execution of the work, the following general Lock-out/Tag-out processes must be engaged.

- **Review and implement all applicable components of CH2MHILL SOP # HSE&Q 310, Lockout/Tag-out.**

Only qualified personnel may work on energized equipment that has not been de-energized by Lock-out/Tag-out procedures. Where applicable, **review and implement all applicable components of CH2MHILL SOP # HSE&Q-206, Electrical Safety** and Electric Safety information contained in this HSP.

AGVIQ-CH2M HILL must verify if any NAS Brunswick Lock-out/Tag-out requirements are specific to the proposed demolition operations. This may include coordinating with the facility owner or representatives (as applicable) who have knowledge with structures and ancillary features scheduled for demolition. This coordination should occur to verify that a clear understanding of exactly what structure components or utility services must be deactivated to provide complete de-energization and isolation of the system or item that must be accessed or worked on.

All equipment or systems which may potentially release stored energy must be locked out to protect against accidental or inadvertent operation when such operation could cause injury to personnel or adverse environmental impact. Personnel shall not attempt to operate any switch, valve, or other energy-isolating device bearing a lock.

Standard Lock-out/Tag-out procedures include the following general steps:

1. Notify all personnel in the affected area of the Lock-out/Tag-out.
2. Shut down the equipment using normal operating controls.
3. Isolate all energy sources.
4. Apply individual lock and tag to each energy isolating device.
5. Relieve or restrain all potentially hazardous stored or residual energy.
6. Verify that isolation of the item (equipment, line, valve etc.) has been accomplished.

If more than one individual is required to lock out equipment, each person will place his "own" lock device on the energy isolating device(s). Additionally, one authorized individual with the knowledge of the "crew operations" may lock out equipment for the "whole crew". In such cases, it is the responsibility of the authorized crew "supervisor" to carry out all steps of the lockout procedure and inform the crew when it is safe to work on the equipment. Additionally, the authorized individual will not remove a "crew lock" until it has been verified that all individuals involved in the work are clear from work areas effected by the Lock-out/Tag-out process.

To execute the Lock-out/Tag-out process, use the procedures outlined below as a general guide, but refer to CH2MHILL HSE&Q **SOP # 310 Lock-out/Tag-out** for additional information. If for any reason the any procedure is in question, contact your immediate supervisor and/or individual responsible for site operations before moving forward.

- All utility outages will follow the contract requirements. Where required, utility outages will be coordinated with utility owners and facility owners, as necessary.
- Notify all affected employees that a Lock-out/Tag-out process is required.
- If the equipment/process is operating, shut it down by the normal stopping procedures.

- Operate the switch, valve, or other energy isolating devices so that the energy source(s) is disconnected or isolated from the equipment. Authorized personnel engaged in the Lock-out/Tag-out process will be certain as to which switch, valve, or other energy isolating devices apply to the equipment being locked out. More than one energy source may be involved. Any questionable identification of sources will be cleared through communication with the individual responsible for site operations and designated equipment/facility owner/operator personnel.
- Stored energy, such as capacitors, springs, elevated machine members, rotating flywheels, pumps, hydraulic systems, and air, gas, steam, or water pressure, etc., must also be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.
- Lock energy isolating devices with an assigned individual lock.
- After ensuring that no personnel are exposed, and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate. CAUTION: Return operating controls to the neutral position after the test.
- Attach a notification/sign on the controls of the end equipment, process system. The identification tag and/or sign will be coordinated with the electrical contractor and the prime contractor. An AGVIQ-CH2M HILL representative will then make known to the facility personnel affected by this operation to familiarize them with the identification of these tags or signs and the procedures in which the contractors will be working by, and the point of contact of the electrical supervisor.
- The equipment is now locked out. Once verified that the equipment is at a zero energy state, work may begin.
- Document inspections of the Locked-out/Tagged-out item(s) will be made periodically by the individual responsible for site operations to ensure that each procedure is being properly followed. The individual responsible for site operations (or other appointed individual) will ensure these inspections are being performed and maintain records of completed inspections. Documentation should include the date of the inspection, equipment on which the procedure was being utilized, the employees involved, and the person performing the inspection.
- Only authorized employees will be allowed to execute Lock-out/Tag-out procedures. Each new or transferred employee will be instructed by the supervisor in lockout procedures. A sufficient number of tags and padlocks will be supplied. During each phase of construction or specific operation, a representative from AGVIQ-CH2M HILL will be present while the electrical supervisor begins the lock out/tag out process.

To restore equipment to service, use the following items as a guide. If for any reason the following items are in question, contact your immediate supervisor before moving forward.

- When the job is complete and equipment is ready for testing or normal service, check the equipment area to see that no one is exposed to potential released energy sources.

- When equipment is clear, remove all locks. The energy isolating devices may be operated to restore energy to the equipment. There must be a supervisor from the electrical contractor and the prime contractor present.
- All safe guards must be put back in place, all affected personnel notified that lockout has been removed and controls positioned in the safe mode prior to lockout removal. Only the individual who applied the lock and tag may remove them.

## 3.22 Machine Guarding

Machine guarding procedures for the anticipated work will likely be applicable to, power and hand tool use (grinders, drills), drill rig operation, operation of mechanized equipment that may be used during the installation of ESC measures or equipment used in the installation of the excavation sheeting system. For these identified activities, the following machine guarding precautions may be applicable to executed work.

- Ensure that all machine guards are in place to prevent contact with drive lines, belts, pinch points, mechanically energized equipment, or any other sources of mechanical injury.
- Unplugging jammed equipment will only be performed when equipment has been shut down, all sources of energy have been isolated, and equipment has been locked/tagged and tested.
- Maintenance and repair of equipment that results in the removal of guards or would otherwise put anyone at risk requires lockout of that equipment prior to work.

## 3.23 Manual Lifting

(Reference SOP # HSE&Q 112, Manual Lifting)

Manual lifting is likely to occur during many phases of the project. Personnel executing assigned tasks where manual lifting is required should implement the following procedures to help reduce the potential for personal injury.

- **Review and implement all applicable components of CH2M HILL SOP # HSE&Q 112, Manual Lifting.**
- AGVIQ-CH2M HILL personnel should notify supervisors or designated safety representatives of pre-existing medical conditions that may be aggravated or re-injured by lifting activities, such that the AGVIQ-CH2M HILL may evaluate safe operational procedures with regard to the required task.
- Proper lifting techniques (use of knees and not back) must be used when lifting any object:
- Plan storage and staging to minimize lifting or carrying distances.
- Use drum dollies/carts with a latching mechanism when handling drums containing groundwater well purge water or other waste. Avoid “chimning” drums wherever possible.

- Split heavy loads into smaller loads.
- Use mechanical lifting aids whenever possible.
- Have someone assist with the lift – especially for heavy (>40 lbs.) or awkward loads.  
Note: If AGVIQ-CH2M HILL personnel are not capable of lifting 40 lbs., seek assistance from a team member to split the load.
- Make sure the path of travel is clear prior to the lift.

## 3.24 Noise

### (Reference SOP # HSE&Q 108, Hearing Conservation Program)

Unprotected exposure to excessive noise levels may lead to gradual and permanent hearing loss. The greater the intensity of a noise and the longer a person is exposed to the noise, the greater the chance of hearing loss. A hearing loss can be permanent or temporary. After certain noise exposures, a person may experience a temporary threshold shift (hearing loss) that results in the inability to hear certain sounds. The ability to hear will usually return. However, repeated or intense noise exposure can prevent this recovery, resulting in permanent hearing loss.

Employee hearing conservation is particularly important for the following site conditions/operations:

- Working around heavy earthmoving equipment or operation of heavy earthmoving equipment with open cabs or with the cab doors open
- During the installation of the excavation sheeting system
- Working around drilling/DPT equipment
- Working around haul trucks delivering fill or aggregate materials
- Operations of pneumatic equipment
- Operation of rotary or impact hand tools

Each employee is responsible for the following:

- **Review and implement all applicable components of CH2M HILL SOP # HSE&Q 108, Hearing Conservation Program**, or implement other Hearing Conservation Programs may be most applicable to the employee.
- Notify the SSHO of high-noise-level areas.
- Wear hearing protection when required.
- Complete noise training and audiometric testing (as required).
- Hearing protection is required in work environments exceeding 85 decibels (dB).
- Hearing protection will be worn when operations occur within or adjacent to high-noise sources (i.e. potentially exceeding 85 dB).

## 3.25 Pressure Vessels Systems

As part of the on-going work, it may be required to dewater excavations and pump, store and treat removed ground water in order to facilitate remediation excavation/backfilling operations. To complete this activity it may be required to utilize Granular Activated Carbon (GAC) systems to treat removed ground water prior to off-site discharge. GAC systems become pressurized during operations and are considered pressure vessel systems. When operating these GAC treatment systems the following procedures must be implemented.

- Operate and maintain pressure vessels, pumps and hosing in accordance with the manufacturer's recommendations.
- Do not exceed the rated pressure of the vessels and hosing of the system.
- The system must be provided with a pressure relief valve/controller that safely reduces the system pressure to within the system rated pressure.
- The pressure relief valve must be rated at no more than 110 percent the rated pressure of the system and must be tested at regular intervals.

Each vessel must be equipped with a functioning pressure gauge to monitor pressure.

## 3.26 Pressure Washing Operations

Pressure washing operations may occur prior to the final demobilization tanks and equipment used at the site, during purging of removed UST system components lines, or drilling equipment and tools which may be contaminated with site GRO constituents. Whenever pressure washing operations are performed at the site, the following procedures must be implemented.

- Rain gear (disposal coated chemical suits for Hazwoper operations), 16-inch-high, steel-toed rubber boots, safety glasses, hard hat with face shield, and inner and outer nitrile gloves should be worn, at a minimum during pressure washing operations.
- Only trained, authorized personnel may operate the high-pressure washer.
- Rinse waste from pressure washing operations must be collected and properly disposed.
- Follow manufacturer's safety and operating instructions.
- Inspect pressure washer before use and confirm dead man switch fully operational.
- The wand must always be pointed at the work area.
- The trigger should never be tied down
- Never point the wand at yourself or another worker.
- The wand must be at least 42 inches from the trigger to the tip.
- The operator must maintain good footing.
- Non-operators must remain a safe distance from the operator.

- No unauthorized attachment may be made to the unit.
- Do not modify the wand.
- All leaks or malfunctioning equipment must be repaired immediately or the unit taken out-of-service.

## 3.27 Sample Collection or Handling

Sample handling, packaging, and preservation will be conducted in support of soil remediation goals. When employees perform sample collection or handling activities to support for waste characterization or confirmation sampling, the work practices and procedures identified below must be followed.

- Skin contact with water, soil, sediment, or debris of undetermined chemical characterization shall be avoided at all times.
- PPE and air monitoring requirements shall be executed in accordance with Sections 5.0 and 6.0, respectively, of this HSP to minimize potential dermal and respiratory exposures to identified site contaminants of concern while conducting sample collection or characterization of potentially contaminated media (debris or other waste inadvertently discovered while excavating.). In addition, good personal hygiene practices and procedures must be maintained (see Section 7.0 of this HSP).
- Caution should be exercised when filling bottles containing acid or base preservatives. Both liquid and vapor phases of acid can cause severe burns.
- Following sample collection, sample container lids should be tightened securely to prevent any leaks, and the containers should be rinsed with clean water to ensure that they are free of chemical constituents.

### 3.27.1 Handling or Sampling of Drummed Waste

During the execution of the contract, various types and quantities of generated waste materials will be generated and may include, but not be limited to PPE, decontamination fluids, or Investigation Derived Waste. Personnel are permitted to handle and/or sample drums containing known waste sources/materials, but handling or sampling of other drums (unknowns) requires a HSP revision or amendment approved by the AGVIQ-CH2M HILL Program CIH. The following control measures must be taken when managing drums containing waste sources/materials:

- Minimize transportation of drums or other containers with generated waste materials. However, where this is deemed necessary appropriate drum “dollies”/hand trucks or other suitable material handling equipment shall be used to transfer drums of generated waste materials.
- **Sample or open only labeled drums or drums known to contain generated waste materials. Unknown drums or drums that show evidence of excessive buckling/bulging, corrosion, vapors, crystallization, unusual discoloration or other abnormalities may not be sampled without the evaluation of engineering controls, proper PPE air monitoring equipment and the use properly trained personnel familiar**

**with the sampling of unknown drum contents. If there is any question to the proper handling or opening of drums.**

- Use caution when sampling bulging or swollen drums. Relieve pressure slowly and step away from the drum as pressure is being released.
- If drums contain, or potentially contain, flammable materials, use non-sparking (i.e., brass) tools to open the drum.
- Picks, chisels, and firearms may not be used to open drums.
- Reseal bung holes or plugs whenever possible.
- Avoid mixing incompatible drum contents.
- Sample drums without leaning over the drum opening.
- Transfer the content of drums using a method that minimizes contact with material.
- PPE and air monitoring requirements shall be executed in accordance with Sections 5.0 and 6.0, respectively, of this HSP in an effort to minimize potential dermal and respiratory exposures to identified site contaminants of concern. In addition, good personal hygiene practices and procedures must be maintained (see Section 7.0 of this HSP).
- Spill-containment procedures specified in Section 8 of this HSP must be appropriate for the material to be handled.
- Institute and maintain good housekeeping practices. Remove debris from work areas and stow unused tools.

### 3.28 Slips, Trips and Falls

Slip, trip and fall hazards exist in virtually all work environments. Even though slip, trip and fall hazards are typically thought of as posing low risk to workers, they account for a large percentage of worker injuries. As such, workers should exercise caution about becoming complacent to recognizing and removing slip, trip and fall hazard from designated work areas. To eliminate slip, trip and fall hazards from the work place the following should be implemented.

- Walk or climb only on equipment and/or surfaces designed for personnel access.
- Observe and avoid areas of unprotected holes, ramps, and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). If these conditions can not be corrected, mark these hazards (i.e. high visibility paint, traffic cones etc) so that workers may recognize and avoid them.
- Employees walking in ditches, swales and other drainage structures adjacent to roads, across undeveloped land or in controlled industrial work/process areas must use caution to prevent slips and falls, which can result in twisted or sprained ankles, knees, and backs.

- Whenever possible work from areas which have flat, stable surfaces and do not enter steep sided ditches/excavations.
- Sturdy, hard toe boots that provide sufficient ankle support shall be used on JV III sites.

## 3.29 Stairways and Ladders

(Reference SOP # HSE&Q 214, Stairways and Ladders)

As part of the execution of the contract work employees may need to utilize stair ways or ladders during access/egress of the upper portion of the excavation sheeting system during the installation of the systems internal struts and bracing, access/egress of properly sloped trench excavations, or during the operation or monitoring of ground water dewatering treatment systems. Where stairways/ladders must be accessed, the following procedures must be implemented

- **Review and implement all applicable components of CH2MHILL SOP # HSE&Q 214, Stairways and Ladders.**
- A Stairway or ladder is generally required when a break in elevation of 19 inches or greater exists.
- Personnel should avoid using both hands to carry objects while on stairways; if unavoidable, use extra precautions.
- Ladders must be inspected for visible defects prior to each day's use. Defective ladders must be tagged and removed from service.
- Ladders must be used only for the purpose for which they were designed and will not be loaded beyond their rated capacity.
- Only one person at a time will climb on or work from an individual ladder.
- User must face the ladder when climbing; keep belt buckle between side rails.
- Ladders will not be moved, shifted, or extended while in use.
- User must use both hands to climb; use rope to raise and lower equipment and materials.
- Straight and extension ladders must be tied off to prevent displacement.
- Ladders that may be displaced by work activities or traffic must be secured or barricaded.
- Portable ladders must extend at least 3 feet above landing surface.
- Straight and extension ladders must be positioned at such an angle that the ladder base to the wall is one-fourth of the working length of the ladder.
- Stepladders are to be used in the fully opened and locked position.
- Users are not to stand on the top two steps of a stepladder, nor are users to sit on top or straddle a stepladder.

Fall protection shall be provided when working from extension, straight, or fixed ladders greater than 6 feet (construction operations) and 4 feet (general operations) from lower levels, where both hands are needed to perform the work or when reaching or working outside of the plane of ladder side rails.

### 3.30 Unknown or Suspect Objects/Materials

If unknown or suspect objects/materials are encountered (i.e. exposed or partially buried drums, biological waste, cylinders, munitions of explosive concern, unexpected stained/discolored soil) are encountered during site operations, ongoing activities shall be immediately suspended. AGVIQ-CH2M HILL or subcontractor personnel encountering unknown or suspect objects/materials shall 1) secure the area and identify the location of the object/material to the extent possible, without causing bodily injury to yourself or others and without disturbing the object, 2) evacuate the work area, 3) immediately notify the project manager of the encountered condition and 4) not provide additional disturbance or otherwise handle the suspect object/material. The site supervisor, SHSO, or Field Team Leader (FTL) shall contact the Project Manager and the HSPAs/CIH to evaluate potential hazards associated with the specific situation encountered. The project team will then address the need for the use of special procedures, engineering controls, PPE or specialized subcontract personnel to safely mitigate the situation.

#### 3.30.1 Munitions and Explosives of Concern

(Reserved)

### 3.31 Vacuum Truck Operations

It is anticipated that during the pre-demolition removal of OHM from the UST system or during the cleaning/purging of removed UST's, the use of vacuum trucks will be used during one or both of these operations. Where vacuum truck use is implemented on the project site, the following must be implemented.

- **Operate vacuum truck in accordance with API Recommended Practice 2219, "Safe Operations of Vacuum Trucks in Petroleum Service".**
- Locate vacuum truck upwind of tank with discharge hose downwind of truck and tank
- Keep vacuum truck ignition source operations area free from flammable vapors.
- Bond and ground vacuum truck hoses to truck and well head when conveying free product to prevent static electricity discharges/sparks.
- Perform LEL monitoring at vacuum truck drive motor during free product removal and shutdown vacuum truck operations with 10% LEL reading in the immediate area.
- Keep hands from vacuum hose inlet.
- Wear protective gloves and hearing protection in the immediate vicinity.
- Do not place vacuum hose inlet in a position that may inadvertently contact other workers in the area.

## 3.32 (Exposure to) Vehicular Traffic

### (Reference SOP # HSE&Q 216, Traffic Control)

The following standard work practices must be exercised when personnel are working in or around haul truck routes or near an area where traffic controls have been established. Exposure to vehicular traffic will be especially prevalent during haul truck operations or transfer of on-site delivered materials or during the transfer and on-site management of excavated soil impacted by GRO constituents.

- **Review and implement all applicable components of CH2M HILL SOP # HSE&Q 216, Traffic Control.**
- When parking your vehicle, park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so it can serve as a barrier.
- Shut off and secure site vehicles prior to exiting them. Park on level ground where possible. If parking on an incline, engage parking brake. If the vehicle has a manual transmission, ensure the transmission is in gear (not neutral) and the parking brake is engaged before exiting the vehicle.
- Exercise caution when exiting traveled way or parking along street— avoid sudden stops, use flashers, etc.
- All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.
- Eye protection should be worn to protect from flying debris.
- Remain aware of factors that influence traffic-related hazards and required controls— sun glare, rain, wind, limited sight-distance, hills etc.
- Always remain aware of an escape route, such as behind an established barrier or parked vehicle.
- Always pay attention to moving traffic - never assume drivers are looking out for you.
- Work as far from traveled way as possible to avoid creating confusion for drivers.
- When workers must face away from a haul truck to perform assigned duties, a “buddy system” should be used, where one worker is looking toward traffic.
- Work area should be protected by a physical barrier.
- Lookouts should be used when physical barriers are not available or practical.

In addition to the above work practices, AGVIQ-CH2M HILL personnel and AGVIQ-CH2M HILL subcontractors shall adhere to the following procedures while operating motor vehicles or other motorized equipment on military/government facilities.

- Always use a seat belt while driving on military/government facilities
- Always observe posted speed limits, traffic signs and signals

- Never use a cell phone or two-way radio while driving on military/government facilities

Violating these requirements may result in loss of military/government facility driving privileges.

### 3.33 Visible Lighting

Site work should be performed during daylight hours whenever possible. Work conducted during hours of darkness (including dusk and dawn) requires the set-up of supplemental lighting equipment. (Note: A general “rule of thumb” is that the illumination intensity must be sufficient to read a newspaper without difficulty). The chart below provides a reference for illumination requirements for various construction related work environments.

Illumination (Foot Candles)	Illumination (Lux)	Area of Operation
5	~ 55	General construction area lighting
3	~ 33	General construction areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas
5	~ 55	Indoors: warehouses, corridors, hallways, and exit ways
5	~ 55	Tunnels, shafts, and general underground work areas: (Exception: minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Bureau of Mines approved caplights shall be acceptable for use in the tunnel heading)
10	~ 108	General construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active store rooms, mess halls and indoor toilets and workrooms.)
30	~ 323	First aid stations, infirmaries, and offices

**Notes:**

A **foot candle** is a unit of illumination on a surface that is everywhere one foot from a point source of one candle.

A **lux** is a unit of measurement of the intensity of light. It is equal to the illumination of a surface one meter away from a single candle.

**CONVERSIONS**

Foot Candles (FC) = Lux x .0929

Lux = Foot candles x 10.76 - (i.e.: 50 FC = 538 LUX)

The following safe work practices shall be considered with regard to lighting in the workplace.

- Do not enter poorly lit areas without first providing portable illumination.
- Do not use non-explosion proof lighting in areas of flammable or combustible gases or liquids.

### 3.34 Welding or Cutting Operations

**(Reference SOP # HSE&Q 314, Welding & Cutting)**

It is anticipated that cutting operations may be required to properly size/prepare or cut-free metallic materials that have been generated during the demolition of the Fuel Island. In addition cutting and welding operations will most certainly be required during the installation and removal of the excavation sheeting system or during the repair or maintenance of onsite heavy equipment. When cutting (or welding) activities are executed on-site, the following processes and precautions must be executed.

- **Review and implement all applicable components of CH2MHILL SOP # HSE&Q 314, Welding & Cutting.**

- Secure a NAS Brunswick hot work permit as required for welding and cutting activity and exercise Fire Prevention measures identified in this HSP.
- Exercise appropriate fire prevention measures such maintaining appropriate size, type and quantity of fire extinguishers in the work area, pre-wet area surrounding the cutting or welding operation, protect the surrounding cutting area with fire proof materials and remove flammable or combustible materials from the area where welding and cutting operations are to be engaged. Station a fire watch adjacent cutting or welding work zone but still minimize the total amount of personnel in the work area to “essential personnel” only.
- Prior to performing any cutting operations, evaluate work areas for the potential presence or build-up of hazardous atmosphere conditions that would require the use of a multi-gas meter (LEL, O<sub>2</sub>, H<sub>2</sub>S, CO) to verify there are no potentially explosive conditions or hazardous atmospheres in the work area. If the potential exists, verify atmospheric conditions of the work area and document readings. Perform periodic checks of the work area for the duration of the welding and cutting procedure.
- During welding or cutting activities, use protective eye equipment which meets the shading where light emitting energy is generated. Use face protection, as necessary to mitigate injuries to the face that may be associated with the selected cutting or welding method. Protective equipment for these activities shall meet the requirements of 29CFR19126.102, Eye and Face Protection.
- Wear a face shield and fire retardant clothing during when cutting with an oxy-acetylene torch or similar cutting equipment and when performing welding operations.
- Only qualified personnel (by training or experience) are permitted to operate cutting or welding equipment.
- Wear fire retardant clothing during when cutting with an oxy-acetylene torch or similar cutting equipment and when performing welding operations.
- During any welding and cutting operations, ensure that sparks are not directed towards the location of 1) flammable/combustible materials 2) other site personnel 3) property that could be damaged.
- During any cutting operations, ensure that sparks are not directed toward the location of 1) flammable/combustible materials, 2) other Site personnel, or 3) property that could be damaged.
- Cutters, welders, and their supervisor shall be trained or possess sufficient experience to perform the safe operation of their equipment, cutting practices cutting. Proper training in respiratory and fire protection may also be applicable.
- All cutting equipment (i.e. cutting heads, hoses, cylinders and valves) and welding stingers shall be inspected before each use to ensure that all required safety devices and ancillary equipment are in place and properly functioning. Defective equipment shall be removed from service, replaced or repaired, and re-inspected before again being placed in service.

- Coatings that exist on surfaces, which may potentially create hazardous fumes (i.e. Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Chromium (VI), Cobalt, Copper, Lead, Manganese, Mercury, Nickel, Ozone, Selenium, Silver, or Vanadium) when ground, heated or otherwise cut, shall be removed a sufficient distance from the area to be heated, to ensure any temperature increase of the un-stripped metal will not be appreciable. Whenever these materials are encountered in confined spaces, local mechanical exhaust ventilation and personal respiratory protective equipment shall be used. The use of local mechanical exhaust ventilation systems that permit the re-entry of exhaust air back into the work area, or local exhaust which incorporate a system for the filtration and recirculation of exhaust air back into the work area shall not be permitted. Whenever these materials, except beryllium and chromium (VI), are encountered in outdoor operations, and local mechanical exhaust ventilation systems sufficient to reduce and maintain personal exposures to within acceptable limits are not provided, then appropriate respiratory protective equipment shall be used.
- When cutting, welding or heating toxic surface coatings (paints, preservatives, surface stripping chemicals, etc.) in enclosed spaces, all surfaces covered with the coatings shall be stripped of such for a distance of at least 4 in (10.1 cm) from the area of heat application or the employees shall be protected by airline respirators.
- Plasma cutting shall employ local mechanical exhaust ventilation or other means adequate to remove the fumes generated. For hoses and hose connections used in cutting operations the following shall be applicable:
  - Fuel gas hose and oxygen hose shall be readily distinguishable from each other.
  - Oxygen and fuel gas hoses shall not be interchangeable. A single hose having more than one gas passage shall not be used.
  - Hose couplings of the type that can be unlocked or disconnected without a rotary motion are prohibited.
  - Hose and hose connectors that have been subject to flashback or shows evidence of severe wear or damage shall be tested to twice the normal pressure to which it is subjected, and in no case less than 300 psi (2068.4-kPa) gauge. Damaged hose and hose connectors, or hose and hose connectors in questionable condition, shall not be used.
  - When parallel runs of oxygen and fuel gas hose are taped together, not more than 4 out of every 12 in (10 out of every 30.4 cm) shall be covered by tape.
  - Boxes used for the storage of gas hose shall be ventilated.
  - Hose connections shall be clamped or otherwise securely fastened in a manner that will withstand, without leakage, twice the pressure to which they are normally subjected in service, but not less than 300 psi (2,068 kPa) gauge.
- For torches used in cutting operations the following shall be applicable:
  - Torches shall be inspected before each use for leaking shutoff valves, hose couplings, and tip connections. Defective torches shall not be used.

- Hoses shall be purged individually before lighting the torch for the first time each day. Hoses shall not be purged into confined spaces or near ignition sources.
- Clogged torch tip openings shall be cleaned with suitable cleaning wires, drills, or other devices designed for such purposes.
- Torches shall be lighted by friction lighters or other approved devices, not by matches or from hot work.
- Torch valves shall be closed and the gas supply shut off whenever work is suspended.
- The torch and hose shall be removed from confined spaces whenever work is suspended.
- Protective devices for cutting operations shall include the following:
  - Oxy fuel gas, and other oxygen-fuel gas welding and cutting systems using cylinder-regulator-hose-torch shall be equipped with both a reverse-flow check valve and a flash arrestor, in each hose, at the torch handle or at the regulator.
  - Connection of multiple sets of oxyacetylene hoses to a single regulator on a single set of oxyacetylene tanks may only be accomplished by installing a commercially available fitting approved by Compressed Gas Association (CGA) standards and listed by a nationally-recognized testing laboratory. The fitting shall be installed on the output side of the regulator and shall have a built-in shut-off valve and reverse-flow check valve on each branch.
  - When oxygen-fuel gas systems are manifolded together the provisions of NFPA 51 shall apply.
- Acetylene regulators shall not be adjusted to permit a discharge greater than 15 psi (103.4 kPa) gauge.

### 3.34.1 Compressed Gas Cylinders

It is anticipated that the use compressed gas cylinders be required during the installation of the excavation sheeting systems and its internal bracing structures. Where compressed gas cylinders are required to facilitate welding or cutting operations associated with the sheeting or other ancillary welding or cutting operations the following must be executed.

- Cylinder valves must be closed when cylinders are not being used and when cylinders are being moved. Cylinders being transported, moved, or stored shall have valve protection caps installed.
- When transported by motor vehicle, hoisted, or carried, cylinders shall be in the vertical position.
- Cylinders shall be hoisted by a cradle, slingboard, or pallet designed to do so, and not by magnets or slings. Valve protection caps shall not be used to lift cylinders.
- Cylinders shall be kept from being knocked over by a chain, cylinder truck, or steadying device.

- Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials by a minimum of 20 feet or by a noncombustible barrier at least 5 feet high having a fire resistant rating of at least one half hour.
- Inside of buildings, cylinders shall be stored in well-ventilated, dry locations at least 20 feet from highly combustible materials. Cylinders should be stored in definitely assigned places away from elevators, stairs, or gangways. Assigned storage areas shall be located where cylinders will not be knocked over or damaged.
- During use, cylinders shall be kept far enough away from the actual welding and cutting operations to prevent sparks, hot slag, or flames from reaching them. When impractical, fire resistant shields shall be provided.
- Before a regulator is connected, the valve shall be opened slightly and closed immediately. This is referred to as “cracking” and is intended to clear the valve of dust or dirt. The person cracking the valve shall stand to the side of the outlet. The valve of a fuel-gas cylinder shall not be cracked where the gas could reach an ignition source.
- Cylinders shall not be placed where they can become part of an electrical circuit.
- Cylinders containing oxygen or fuel-gas shall not be taken into confined spaces.
- Cylinders, valves, couplings, regulators, hoses, and apparatus shall be kept free of oil and grease.
- If cylinders are frozen, warm (not boiling) water shall be used to thaw them.
- Fuel-gas cylinder valves shall not be opened more than 1 ½ turns, for quick closing.
- When a special wrench is used to open a cylinder valve, it shall be left in position on the valve. Cylinder valves shall be closed when work is finished.
- No damaged or defective cylinders shall be used. If a leak should develop at a fuse plug or other safety device, the cylinder shall be removed from the work area.
- No one except the owner of the cylinder or authorized agent shall refill a cylinder nor attempt to mix gases in a cylinder.
- Cylinders should be secured in an upright position at all times.
- Cylinders must be shielded from welding and cutting operations and positioned to avoid being struck or knocked over; contacting electrical circuits; or exposed to extreme heat sources.
- Cylinders must be secured on a cradle, basket, or pallet when hoisted; they may not be hoisted by choker slings.

### 3.35 Working Alone

(Reserved)

## 3.36 Working Around Material Handling Equipment

Where material handling equipment (earthmoving equipment, cranes, haul trucks) may be operating on or adjacent to the project work sites, it is important to observe the following measures when working in the same areas as heavy equipment and haul trucks.

- Never approach operating equipment/vehicles from the rear. Always make positive contact with the operator, and confirm that the operator has stopped the motion of the equipment.
- Never approach the side of operating equipment; remain outside of the swing and turning radius.
- Maintain distance from pinch points of operating equipment/vehicles.
- Never turn your back on any operating equipment/vehicles.
- Never climb onto operating equipment or operate subcontractor/client equipment/vehicles.
- Never ride AGVIQ-CH2M HILL, subcontractor, or client equipment/vehicles unless authorized to do so and unless it is designed to accommodate passengers (equipped with firmly attached passenger seat).
- Never work or walk under a suspended load.
- Never use equipment as a personnel lifts; do not ride excavator buckets, crane hook, or material handling equipment forks.
- Always stay alert and maintain a safe distance from operating equipment, especially equipment/vehicles on cross slopes and unstable terrain.
- AGVIQ-CH2M HILL personnel will pull to the side of the road when encountering a forklift/heavy equipment. Even if the forklift/heavy equipment is not loaded with cargo, AGVIQ-CH2M HILL personnel will still pull to the side of the road and stop until the forklift has passed.

### 3.36.1 Powered Industrial Trucks

#### (Reference HSE-309, Forklifts)

Powered Industrial Trucks (i.e. forklifts, material handlers) may be required for materials movement during project activities (i.e. excavation sheeting system). Powered Industrial Trucks present the potential for damage to equipment, materials and personnel by impaling or striking personnel or materials with the fork tines. Additionally, Powered Industrial Trucks may tip if they are incorrectly loaded, driven at excessive speeds, operated with the forks too high or during excessively windy conditions.

The following rules apply whenever a forklift is used on the project:

- **Review and implement all applicable components of CH2MHILL SOP # HSE-309, Forklifts.**

- Only trained and authorized drivers will operate Powered Industrial Trucks. Powered Industrial Truck Operators must receive training in accordance with 29 CFR 1910.178.
- A rated lifting capacity must be posted in a location readily visible to the operator.
- A Powered Industrial Truck must not be used to elevate employees unless a platform with guardrails, a back guard, and a kill switch is provided on the vehicle. When guardrails are not possible, fall arrest protection is required.
- The subcontractor operating the forklift must post and enforce a set of operating rules for forklift trucks.
- Stunt driving and horseplay are prohibited.
- Employees must not ride on the forks.
- Employees must never be permitted under the forks (unless forks are blocked).
- The driver must inspect the forklift once a shift and document this inspection.
- The operator must look in the direction of travel and must not move the vehicle until all persons are clear of the vehicle.
- Forks must be carried as low as possible.
- The operator must lower the forks, shut off the engine, and set the brakes (or block the wheels) before leaving the forklift operator's position unless maintenance or safety inspections require the forklift to be running.
- Trucks must be blocked and have brakes set when Powered Industrial Trucks are driven onto their beds.
- Extreme care must be taken when tilting elevated loads.
- Every forklift must have operable brakes capable of safely stopping it when fully loaded.
- Powered Industrial Trucks must have parking brakes and an operable horn.

When the operator is exposed to possible falling objects, industrial trucks must be equipped with overhead protection (canopy).

### 3.36.2 Rigging

**(Reference SOP # HSE&Q 316, Rigging)**

Rigging may be employed during the execution of this task order for the lifting and/or lowering of materials associated with the installation of the excavation sheeting system or the removal of the UST system to be incorporated into the project or for set-up and operation of equipment during project execution. Rigging is also an intricate component of Crane operations. Where rigging equipment is required on the project, the following work practices shall be applicable.

- **Review and implement all applicable components of CH2MHILL SOP # HSE&Q-316, Rigging.**

- All rigging equipment must be inspected by a competent person prior to use for signs of excessive wear; equipment found to be damaged will be tagged and removed from service.
- Suspended loads will not pass over workers at any time. Site personnel are prohibited from passing under suspended loads.
- Rigging use, maintenance and inspection shall be performed in accordance with the applicable standards of 29CFR1926.250 and Army Corps of Engineers Manual EM 385 1-1, section 15, Rigging, which ever is more stringent.
- Only load rated (tagged or labeled) rigging shall be utilized on AGVIC/CH2M HILL projects. User shall familiarize themselves with design load rate capacities (i.e. vertical, basket/cradle or choker applications) for the selected rigging.
- Tag lines shall be attached to every load being lifted. Tag lines will be used for all suspended loads so that riggers and tenders will not have to be in direct contact with any suspended load while controlling position or orientation. NO PERSON SHALL BE IN CONTACT WITH A LIVE LOAD AT ANY TIME.
- Rigging shall be properly stored in a vertical position, where possible, and inspected daily, by a qualified person, before use. An inspection log must be maintained to document inspection findings and condition of the rigging. Rigging identified as “damaged” must identified as such and removed from service.
- AGVIC-CH2M HILL and subcontractor personnel shall not “ride” on materials under control loads being lifted.

### 3.36.3 Suspended Loads

- Suspended loads will not pass over workers at any time.
- Site personnel are prohibited from passing under suspended loads.
- Tag lines will be used for all suspended loads so that riggers and tenders will not have to be in direct contact with any suspended load while controlling position or orientation.

## 3.37 Working on or Over Water

(Reserved)

## 3.38 General Hazards

### 3.38.1 General Practices and Housekeeping

Maintaining proper site housekeeping measures promotes the elimination of slip, trip and fall hazards and exhibits a perception of pride in our work product and habits. Poor housekeeping can result in the basis of citations under 29CFR1926.25(a) or other applicable regulations. Good housekeeping practices must be implemented on every AGVIQ-CH2MHILL controlled project site and at a minimum shall be as follows:

- Maintain good housekeeping at all times in all project work areas.

- During the course of executed project operations, construction, alteration, or repairs, form and scrap lumber with protruding nails, and all other debris, shall be kept cleared from work areas, passageways, and stairs, in and around buildings or other structures.
- Combustible scrap and debris shall be removed at regular intervals during the course of construction. Safe means shall be provided to facilitate such removal.
- Containers shall be provided for the collection and separation of waste, trash, oily and used rags, and other refuse. Containers used for garbage and other oily, flammable, or hazardous wastes, such as caustics, acids, harmful dusts, etc. shall be equipped with covers and appropriately labeled. Garbage and other waste shall be disposed of at frequent and regular intervals.
- Establish common paths of travel and keep them free from the accumulation of materials.
- Keep access to aisles, exits, ladders, stairways, scaffolding, and emergency equipment free from obstructions.
- Provide slip-resistant surfaces, ropes, and/or other devices to be used.
- Designate specific areas for the proper storage of materials.
- Store tools, equipment, materials, and supplies in an orderly manner.
- As work progresses, neatly store scrap and unessential materials or remove them from the work area.
- Provide containers for collecting trash and other debris and remove them at regular intervals.
- Clean up all spills quickly. Clean oil and grease from walking and working surfaces.

### 3.38.2 Hazard Communication

A hard copy of the AGVIQ, LLC, and CH2MHILL, Inc. Hazard Communication program information and MSDS material shall be provided at the project site.

In general, the SSHO will be the main contact in any onsite emergency coordination or communication situation and will ensure offsite emergency agencies have been contacted prior to the start of and verify that emergency contact numbers contained in this HSP are accurate/operational work. The SSHO will communicate with all potential emergency response organizations that would respond to an on-site emergency condition. In the event that during an emergency situation, the primary SSHO is not available or not capable of performing this function, an alternate SSHO or Site Superintendent can fulfill these duties. The SSHO or designee will serve as the Hazard Communication Coordinator (SSHO), and will perform the following:

- Review the COC and other applicable hazard communication information contained in this HSP.
- Complete an inventory of chemicals brought onsite. See **Attachment 6** of this HSP. Give employees required chemical-specific HAZCOM training information using the format included in **Attachment 6** of this HSP.
- Confirm that an inventory of chemicals brought onsite is available.

- Request or confirm locations of MSDSs from the client, contractors, and subcontractors or material vendors for chemicals to which AGVIQ-CH2M HILL employees are potentially exposed. Maintain MSDSs in this HSP (**Attachment 5**).
- Before, or as chemicals arrive onsite, obtain an MSDS for each hazardous chemical.
- Label chemical containers with the identity of the chemical and with hazard warnings, and store properly.
- Store all materials properly, giving consideration to compatibility, quantity limits, secondary containment, fire prevention, and environmental conditions.

### 3.38.3 Shipping and Transportation of Chemical Products

Chemicals brought to the site might be defined as hazardous materials by the U.S. Department of Transportation (DOT). All staff who ship the materials or transport them by road must receive training in shipping dangerous goods. All hazardous materials that are shipped (e.g., via Federal Express) or are transported by road must be properly identified, labeled, packed, and documented by trained staff. Contact the AGVIQ-CH2M HILL Project Manager, HSPA/CIH or program regulatory specialist for additional information.

### 3.38.4 Heat Stress

It is recommended that personnel drink 16 ounces of water before beginning work. Disposable cups or containers and water maintained at 50°F to 60°F shall be available. Under severe conditions, drink 1 to 2 cups every 20 minutes, for a total of 1 to 2 gallons per day. Do not use alcohol in place of water or other nonalcoholic fluids. Decrease your intake of coffee and caffeinated soft drinks during working hours.

- Acclimate yourself by slowly increasing workloads (e.g., do not begin with extremely demanding activities).
- Use cooling devices, such as cooling vests, to aid natural body ventilation. These devices add weight, so their use should be balanced against efficiency.
- Use mobile showers or hose-down facilities to reduce body temperature and cool protective clothing.
- Conduct field activities in the early morning or evening and rotate shifts of workers, if possible.
- Whenever possible, avoid direct sun, which can decrease physical efficiency and increase the probability of heat stress. Take regular breaks in a cool, shaded area. Use a wide-brim hat or an umbrella when working under direct sun for extended periods.
- Provide adequate shelter/shade to protect personnel against radiant heat (sun, flames, hot metal).
- Maintain good hygiene standards by frequently changing clothing and showering.
- Observe one another for signs of heat stress. Persons who experience signs of heat syncope, heat rash, or heat cramps should consult the SSHO to avoid progression of heat-related illness.

- To counteract the onset of heat stress symptoms, a work-break regimen must be established during the executed work. Workers in Level C PPE shall be allowed to rest and lower core body temperature to normal status when any one condition is exceeded:
  - Visual signs and symptoms of heat stress are present in a worker.
  - It is determined that a worker's core body temperature exceeds 100°F.
  - Active work duration in Level C PPE in ambient temperatures in excess of 70°F (without regard to humidity evaluation) occurs for more than 1 hour, or less where personnel reactions, physical conditions or extreme atmospheric conditions dictate.
  - For employees in permeable work clothing, Wet Bulb Globe Temperature (WBGT) Index or physiological monitoring shall be conducted and work/rest regimens established.

<b>SYMPTOMS AND TREATMENT OF HEAT STRESS</b>					
<b>Signs and Symptoms</b>	<b>Heat Syncope</b>	<b>Heat Rash</b>	<b>Heat Cramps</b>	<b>Heat Exhaustion</b>	<b>Heat Stroke</b>
	Sluggishness or fainting while standing erect or immobile in heat.	Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure.	Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours.	Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low	Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature (104F or above).
<b>Treatment</b>	Remove to cooler area. Remove outer impermeable protective clothing. Rest victim lying down in supine position (on back, facing up) with head shoulders slightly elevated. Increase fluid intake. Recovery usually is prompt and complete. Where effected person is conscious, have them loosen their clothing to promote cooling surface between clothing/body.	Remove to cooler area. Remove outer impermeable protective clothing. Remove to cooler area. Remove outer impermeable protective clothing. Rest victim lying down in supine position (on back, facing up) with head shoulders slightly elevated.. Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection. Where effected person is conscious, have them loosen their clothing to promote cooling surface between clothing/body.	Remove to cooler area. Remove outer impermeable protective Rest victim lying down in supine position (on back, facing up) with head shoulders slightly elevated. Increase fluid intake. Where effected person is conscious, have them loosen their clothing to promote cooling surface between clothing/body.	Remove to cooler area. Rest victim lying down in supine position (on back, facing up) with head shoulders slightly elevated. Administer fluids by mouth. Seek medical attention immediately. Where effected person is conscious, have them loosen their clothing to promote cooling surface between clothing/body.	Remove to cooler area. Rest victim lying down in supine position (on back, facing up) with head shoulders slightly elevated. Where effected person is conscious, have them loosen their clothing to promote cooling surface between clothing/body. Call ambulance, and <u>get medical attention immediately!</u> Provide <u>sips</u> of cool water to if fully conscious and not nauseous or vomiting. Cool rapidly by soaking clothing in cool-but not cold-water. This procedure shall only be performed where directed by someone with medical training/licensure (i.e. EMT, physician) and only as a life saving precaution. Evaluate employee's condition by an occupational physician prior to resuming normal assigned duties.

### 3.38.5 Monitoring Heat Stress

Heat Stress monitoring procedures must be implemented when the ambient air temperature exceeds 70°F, the relative humidity is high (>50 percent), or when workers exhibit symptoms of heat stress, or when workers are required to wear impermeable protective clothing (Saranex, Tyvek or Rain Gear) to perform their assigned duties. When AGVIQ-CH2M HILL employees are required to wear impermeable protective clothing (Saranex, Tyvek or Rain Gear) to perform their assigned duties, Level C PPE and are exposed to ambient air conditions in excess of 70°F, physiological monitoring of employees is required. This monitoring will be facilitated by the use of automatic blood pressure monitors and by taking body temperature measurements monitored with aural or oral thermometers. All temperature measurement devices shall be affixed with disposable covers or protectors to ensure exposure to bloodborne pathogens does not occur.

The heart rate (HR) should be measured by the radial pulse for 30 seconds, as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 100 beats/minute, or 20 beats/minute above resting pulse. If the HR is higher, the next work period should be shortened by 33 percent, while the length of the rest period stays the same. If the pulse rate still exceeds 100 beats/minute at the beginning of the next rest period, the work cycle should be further shortened by 33 percent. The procedure is continued until the rate is maintained below 100 beats/minute, or 20 beats/minute above resting pulse.

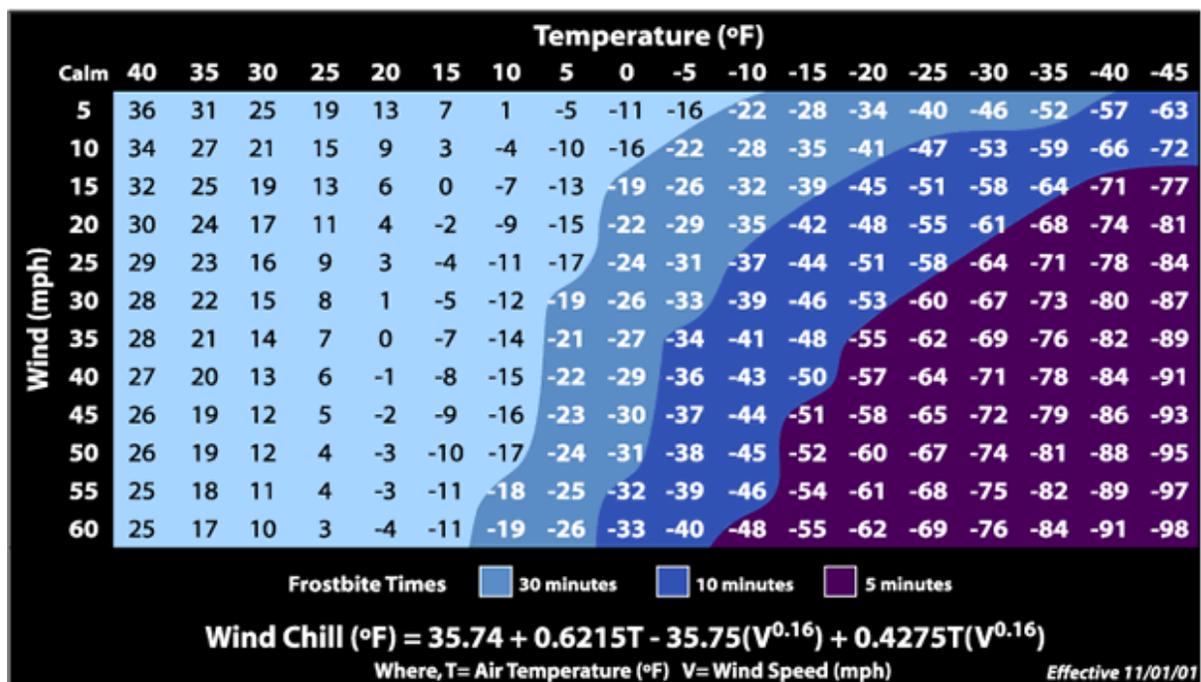
### 3.38.6 Cold Stress

- Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather.
- Consider monitoring the work conditions and adjusting the work schedule using guidelines developed by the U.S. Army (wind-chill index) and the National Safety Council (NSC).
- Wind-chill index is used to estimate the combined effect of wind and low air temperatures on exposed skin. The wind-chill index does not take into account the body part that is exposed, the level of activity, or the amount or type of clothing worn. For those reasons, it should only be used as a guideline to warn workers when they are in a situation that can cause cold-related illnesses.
- NSC Guidelines for Work and Warm-Up Schedules can be used with the wind-chill index to estimate work and warm-up schedules for fieldwork. The guidelines are not absolute; workers should be monitored for symptoms of cold-related illnesses. If symptoms are not observed, the work duration can be increased.
- Persons who experience initial signs of immersion foot, frostbite, hypothermia should consult the SHSO to avoid progression of cold-related illness.
- Observe one another for initial signs of cold-related disorders.
- Obtain and review weather forecast – be aware of predicted weather systems along with sudden drops in temperature, increase in winds, and precipitation.

SYMPTOMS AND TREATMENT OF COLD STRESS			
	Immersion (Trench) Foot	Frostbite	Hypothermia
Signs and Symptoms	Feet discolored and painful; infection and swelling present.	Blanched, white, waxy skin, but tissue resilient; tissue cold and pale.	Shivering, apathy, sleepiness; rapid drop in body temperature; glassy stare; slow pulse; slow respiration.
Treatment	Seek medical treatment immediately.	Remove victim to a warm place. Re-warm area quickly in warm—but not hot water. Have victim drink warm fluids, but not coffee or alcohol. Do not break blisters. Elevate the injured area, and get medical attention.	Remove victim to a warm place. Have victim drink warm fluids, but not coffee or alcohol. Get medical attention.



## Wind Chill Chart



### 3.39 Procedures for Locating Buried Objects/Utilities

Local Utility Mark-Out Service

Name: DIG SAFE

Phone: 888-344-7233

Email: <http://www.digsafe.com/>

Do not begin subsurface construction activities (e.g., excavation, drilling) or other ground disturbing activities until a check for underground utilities and similar obstructions has

been conducted. The use of as-built drawings and utility company searches must be supplemented with a geophysical or other survey by a qualified, independent survey contractor to identify additional and undiscovered buried utilities. Examples of the type of geophysical technologies include:

- **Ground Penetrating Radar (GPR)**, which can detect pipes, including both metallic and non-metallic gas pipes, tanks, conduits, and cables, at depths up to 30 feet depending on equipment. Sensitivity for both minimum object size and maximum depth detectable depends on equipment selected, soil conditions, etc.
- **Radio Frequency (RF)** involves inducing an RF signal in the pipe or cable and using a receiver to trace it. Some electric and telephone lines emit RF naturally and can be detected without an induced signal. This method requires knowing where the conductive utility can be accessed to induce RF field if necessary.
- **Dual RF** is a modified version of RF detection using multiple frequencies to enhance sensitivity but with similar limitations to RF.
- **Ferromagnetic Detectors** are metal detectors that will detect ferrous and non-ferrous utilities. Sensitivity is limited, e.g., a 100-mm iron disk to a depth of about one meter or a 25-mm steel paper clip to a depth of about 20 cm.
- **Electronic markers** are emerging technologies that impart a unique electronic signature to materials such as polyethylene pipe to facilitate location and tracing after installation. Promising for future installations but not of help for most existing utilities already in place.

### 3.39.1 Procedure

- The following procedures shall be used to identify and mark underground utilities during subsurface construction activities on the project.
- The survey subcontractor shall determine the most appropriate geophysical technique or combinations of techniques to identify the buried utilities on the project, based on the survey contractor's experience and expertise, types of utilities anticipated to be present, and specific site conditions.
- The survey contractor shall employ the same geophysical techniques used on the project to identify the buried utilities, to survey the proposed path of subsurface construction work to confirm no buried utilities are present.
- Identify customer specific permit and/or procedural requirements for excavation activities. For military installations, contact the Base Civil Engineer and obtain the appropriate form to begin the clearance process.
- Contact utility companies or the state/regional utility protection service at least three working days prior to excavation activities to advise of the proposed work, and ask them to establish the location of the utility underground installations prior to the start of actual excavation.
- Schedule the independent survey.

- Obtain utility clearances for subsurface work on both public and private property.
- Clearances are to be in writing, signed by the party conducting the clearance.
- Underground utility locations must be physically verified by hand digging using wood or fiberglass-handled tools when any adjacent subsurface construction activity (e.g., mechanical drilling, excavating) work is expected to come within 5 feet of the marked underground system. If subsurface construction activity is within 5 feet and parallel to a marked existing utility, the utility location must be exposed and verified by hand digging every 100 feet.
- Protect and preserve the markings of approximate locations of facilities until the markings are no longer required for safe and proper excavations. If the markings of utility locations are destroyed or removed before excavation commences or is completed, the Project Manager must notify the utility company or utility protection service to inform them that the markings have been destroyed.
- Conduct a site briefing for employees regarding the hazards associated with working near the utilities and the means by which the operation will maintain a safe working environment. Detail the method used to isolate the utility and the hazards presented by breaching the isolation.
- Monitor for signs of utilities during advancement of intrusive work (e.g., change in color, texture, or density during excavation that could indicate the ground has been previously disturbed).
- In addition to the information contained in this section, personnel performing hand auguring operations should use a fiberglass ground probe to search ahead to the next sample interval prior to advancing the hand auger. When performing environmental sampling, decontamination of the fiberglass ground probe shall apply.
- When the client or other onsite party is responsible for determining the presence and locations of buried utilities, the AGVIQ-CH2M HILL individual responsible for site operations shall confirm the arrangement and be available onsite to verify the location of underground utilities or identified subsurface anomalies that may be in question and require further investigation measures.

## 3.40 Biological Hazards and Controls

The following sections provide information on potential biological hazards. Site personnel shall notify their overall supervisors and their project site supervisor of any potential allergic reactions that may occur as a result of contact with biological hazards in the workplace. If employee antidotes are required to counteract allergic reactions from biological hazard exposure, employees shall make personnel, who may be required to administer personal antidotes, aware of the location, type, and quantity of antidotes needed to counteract any potential allergic reaction(s).

### 3.40.1 Venomous Snakes

(Reserved)

### 3.40.2 Poisonous Plants

Poison ivy, poison oak, and poison sumac typically are found in brush or wooded areas. They are more commonly found in moist areas or along the edges of wooded areas. Shrubs are usually 12" to 30" high, or can also be a tree-climbing vine, with triple leaflets and short, smooth hair underneath. Plants are red and dark green in Spring and Summer, with yellowing leaves anytime especially in dry areas. Leaves may achieve bright reds in Fall, but plants loses its (yellowed, then brown) leaves in Winter, leaving toxic stems. All parts of the plant remain toxic throughout the seasons.

Become familiar with the identity of these plants (see below). Wear protective clothing that covers exposed skin and clothes. Avoid contact with plants and the outside of protective clothing. If skin contacts a plant, wash the area with soap and water immediately. If the reaction is severe or worsens, seek medical attention.

**Poison Ivy**



**Poison Sumac**



**Poison Oak**



#### 3.40.2.1 Exposure

Contamination with poison oak, ivy or sumac can happen through several pathways. These include

- Direct skin contact with any part of the plant.
- Contact with clothing that has been contaminated
- Contact from removing shoes that have been contaminated. (your shoes are coated with oil)
- Sitting in a vehicle that has become contaminated
- Contact with any objects or tools that have become contaminated.

Exposure to poison oak, ivy or sumac often becomes an OSHA recordable illness. Take proper action if you are potential contaminated. The dermatitis is so severe that many people seek medical care and get prescription cortisone creams or steroid shots to reduce the suffering caused by the itch.

**For CH2M HILL employees** exposed on the job, contact WorkCare at 866-893-2514 for assistance with the management of the exposure. For work-related injuries or illnesses to

CH2M HILL personnel, inform the AGVIQ-CH2M HILL Project Manger (overall) and the AGVIQ-CH2M HILL HSM and help Human Resources administrator complete a HITS (Hours & Incident Tracking System) Form. HITS must be completed within 24 hours of incident.

**For AGVIQ employees** who are injured at work, see the closest qualified medical facility for medical attention notify your supervisor and the Human Resource office for injury management assistance. See Sections 10.3, 10.7 and **Attachment 11** of this HSP for additional information.

#### 3.40.2.2 Best Work Practices

If you must work on a site that has been identified to potentially contain poison oak, ivy or sumac, the following precautions are necessary:

- Identify plants containing urushiol – The best way to prevent exposure is to recognize the plant and avoid working in areas where poison oak, ivy or sumac is present.
- If you must work in areas with urushiol containing plants, contact you project manager and health and safety manager to determine the best procedures to prevent contamination.
- Do not drive vehicles onto the site where it will come into contact with poison oak, ivy or sumac. Vehicles which need to work in the area, such as drill rigs or heavy equipment must be washed and decontaminated as soon as possible after leaving the site.
- All tools used in the area, including those used to cut back the plants, surveying instruments used in the area, air monitoring equipment or other test apparatus must be decontaminated before they are placed back into the site vehicle. If on-site decontamination is not possible, use plastic to wrap any tools or equipment until they can be decontaminated. If working on or near the ground surface, place plastic on the ground to cover the grass and foliage.
- Personal protective equipment (PPE), including Tyvek coveralls, gloves, and boot covers must be worn. PPE and plastic used to cover the ground must be placed into separate plastic bags and sealed if they are not disposed immediately into a trash receptacle.
- Shower as soon as possible to remove any potential contamination. Any body part with suspected or actual exposure should be washed with “Tecnu” or other product designed for removing urushiol. If you do not have Tecnu wash with cold water. Do not take a bath, as the oils can form and invisible film on top of the water and contaminate your entire body upon exiting the bath.
- Zanafel™ may also be used to treat exposed areas that are experiencing signs and symptoms of poison oak, ivy or sumac contamination. The CH2M HILL warehouses carry Zanafel™ products, which must be carried in First Aid Kits as deemed appropriate. Refer to the Zanafel™ information guide below for specific product and contact information.

- Use products such as IvyBlock™ to prevent poison oak, ivy and sumac contamination. IvyBlock™ is approved by the FDA to prevent the rash caused by poison oak, ivy and sumac.

If there is exposure use the following first aid procedures, or others you may find to alleviate the pain and itching.

### 3.40.2.3 Poison Oak, Ivy, and Sumac First Aid

<p><b>Are there any of these problems?</b></p> <ul style="list-style-type: none"> <li>• Swelling in the throat, tongue and/or lips</li> <li>• A hard time breathing or swallowing</li> <li>• Weakness, dizziness</li> <li>• Bluish lips and mouth</li> <li>• Unconsciousness</li> </ul> <p style="text-align: center;"><b>NO</b></p>	<p style="text-align: center;"><b>YES</b></p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p style="text-align: center;"><b>Use emergency kit with adrenalin, if available, and Get Emergency Care.</b></p>
<p><b>Do you have any of these problems?</b></p> <ul style="list-style-type: none"> <li>• Skin that is very bright red.</li> <li>• Pus.</li> <li>• Rash that has spread to the mouth, eyes or genitals.</li> <li>• Rash on large areas of the body or the face.</li> </ul> <p style="text-align: center;"><b>NO</b></p>	<p style="text-align: center;"><b>YES</b></p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p><b>Give first aid before seeing doctor:</b></p> <ul style="list-style-type: none"> <li>• Take a hot shower (only after rash develops), put the rash area in hot water or pour hot water over it. Make sure the water is not too hot to burn the skin. The hot water causes itching at first, but brings relief later. Do not use soap.</li> <li>• Take an over-the-counter antihistamine, such as Benadryl, as stated on the label.</li> <li>• For weeping blisters:</li> <li>• Mix 2 teaspoons of baking soda in 1 quarter (4 cups) of water.</li> <li>• Dip squares of gauze in this mixture.</li> <li>• Cover the blisters with the wet gauze for 10 minutes, four times a day. (Do not apply this to the eyes.)</li> </ul>
<p style="text-align: center;"><b>NO</b></p> <div style="text-align: center;">  <p><b>Provide Self-Care</b></p> </div>	

### Self-Care/First Aid

- Wash (decontaminate) all affected areas with warm water and a strong soap.
- Keep your hands away from your eyes, mouth and face.
- Do not scratch or rub the rash.
- Apply any of these to the skin rash:
  - Calamine (not Caladryl) lotion
  - Zanafel™ lotion
  - Zinc oxide ointment
  - Paste made with baking soda - mix 3 teaspoons of baking soda with 1 teaspoon of water
- Take an over-the-counter antihistamine such as Benadryl, as stated on the label
- If self-care/first aid measures don't bring relief, call your doctor.

### 3.40.2.4 Urushiol Plant Facts

#### Urushiol Oil is Potent

- Only 1 nanogram (billionth of a gram) needed to cause rash.
- Average is 100 nanograms for most people.
- 1/4 ounce of urushiol is all that is needed to cause a rash in every person on earth.
- 500 people could itch from the amount covering the head of a pin.
- Specimens of urushiol several centuries old have found to cause dermatitis in sensitive people.
- 1 to 5 years is normal for urushiol oil to stay active on any surface including dead plants.
- Derived from urushi, Japanese name for lacquer.

Myth	Fact
Poison oak, ivy, and sumac are contagious	Rubbing the rashes won't spread poison ivy to other parts of your body (or to another person). You spread the rash only if <b>urushiol oil</b> -- the sticky, resinlike substance that causes the rash -- has been left on your hands.
You can catch poison ivy simply by being near the plants	Direct contact is needed to release <b>urushiol oil</b> . Stay away from forest fires, direct burning, or anything else that can cause the oil to become airborne such as a lawnmower, trimmer, etc.
Leaves of three, let them be	Poison sumac has 7 to 13 leaves on a branch, although poison ivy and oak have 3 leaves per cluster
Do not worry about dead plants	<b>Urushiol</b> oil stays active on any surface, including dead plants, for up to 5 years.
Breaking the blisters releases <b>urushiol</b> oil that can spread	Not true. But your wounds can become infected and you may make the scarring worse. In very extreme cases, excessive fluid may need to be withdrawn by a doctor.

### 3.40.2.5 New Cream to Treat Exposure to Poison Plants

Exposure to poison oak, ivy and sumac can be uncomfortable, and in some cases the rash can become so severe that medical care is required. A relatively new product is available Zanafel™ ([www.zanafel.com](http://www.zanafel.com)) that helps prevent blistering and itching from becoming severe. If you are working in an area with poison oak, ivy or sumac, you can obtain this cream by

contacting CH2M HILL's regional warehouse or notify your supervisor of the need to purchase this material. :

Please remember, the cream does not replace preventative measures, including:

- Avoiding contact with poison oak, ivy and sumac.
- Wearing Tyvek coveralls and gloves to prevent contact.
- Washing with Tecnu® (or a similar product) after potential exposure.
- Washing clothing and decontaminating equipment with an oil-cutting detergent.

#### **More information about Zanfel (from Zanfel):**

Zanfel™ is an effective wash for urushiol-induced contact dermatitis. Urushiol is the toxin known to cause the itching and rash associated with poison oak, ivy, sumac, poisonwood, and related plants. Zanfel works by surrounding urushiol and bonding with it, thereby enabling it to be rinsed away. Unlike some products that require use within 10 to 20 minutes of contact or that required continued use until the rash is gone (which can take up to 5 weeks), Zanfel offers relief at any stages of the reaction and often with only one wash. Individuals with particularly severe reactions may require additional washes. Most individuals experience relief from the itching within 30 seconds of application. The rash will begin to subside within hours if the reaction is mild to moderate. Severe and systemic cases will still require medical attention. Severe cases are defined as breakouts that are present on more than 15 percent of the body, and new breakouts continue to develop after day 4.

### **3.40.3 Ticks**

Ticks typically are in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown and can be up to one-quarter inch in size. Wear tightly woven light-colored clothing with long sleeves and pant legs tucked into/taped to boots; spray **only outside** of clothing with permethrin or permanone and spray skin with only N, N-diethyl-meta-polyamide (DEET); and check yourself frequently for ticks. Where exposure to ticks is verified, personnel shall utilize "bug-out" suits, disposal tyvek type coveralls or dedicated permethrin impregnated clothing to minimize potential exposures to ticks or other biting insects (i.e., chiggers). However, when this type of protective clothing is used and ambient air temperatures are elevated (> 70°F) heat stress preventive measures and monitoring protocols must be implemented. See the Heat Stress section in this HSP for additional information.

#### **3.40.3.1 Hazard Control**

The methods for controlling exposure to ticks include, in order of most-preferred to least:

- Avoiding tick habitats and ceasing operations in heavily infested areas
- Reducing tick abundance through habitat disruption or application of acaricide
- Personal protection through use of repellants and protective clothing
- Frequent tick inspections and proper hygiene

Vaccinations are not available and preventive antibiotic treatment after a bite is generally not recommended.

### 3.40.3.2 Tick Identification

There are five varieties of hard-bodied ticks that have been associated with tick-borne pathogens. These tick varieties include:

- Deer (Black Legged) Tick (eastern and pacific varieties)
- Lone Star Tick
- Dog Tick (American and Brown)
- Rocky Mountain Wood Tick
- Western Black-legged tick

### 3.40.3.3 Illnesses and Signs/Symptoms

There are six distinguishable tick-borne pathogens that cause human illness in the United States. These pathogens may be transmitted during a tick bite – normally hours after attachment. The illnesses, presented in approximate order of most common to least, include:

1. Lyme (bacteria)
2. Rocky Mountain Spotted Fever (RMSF) (bacteria)
3. Ehrlichiosis (bacteria)
4. Southern Tick-Associated Rash Illness (STARI) (bacteria)
5. Tularemia (Rabbit Fever) (bacteria)
6. Babesia (protozoan parasite)

Symptoms will vary based on the illness, and may develop in infected individuals typically between 3 and 30 days after transmission. Some infected individuals will not become ill or may develop only mild symptoms. These illnesses present with some or all of the following signs and symptoms: fever, headache, muscle aches, stiff neck, joint aches, nausea, vomiting, abdominal pain, diarrhea, malaise, weakness, and small solid, ring-like, or spotted rashes. The bite site may be red, swollen, or develop ulceration or lesions. A variety of long-term symptoms may result when untreated, including debilitating effects and death.

### 3.40.3.4 Tick Removal

1. Use fine-tipped tweezers or shield your fingers with a tissue, paper towel, or nitrile gloves.
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 healthcare provider if infection occurs.)
3. Do not squeeze, crush, or puncture the body of the tick because its fluids (saliva, hemolymph, and gut contents) may contain infectious organisms. Releasing these organisms to the outside of the tick's body or into the bite area may increase the chance of infectious organism transmission.
4. Do not handle the tick with bare hands because infectious agents may enter through mucous membranes or breaks in the skin. This precaution is particularly directed to individuals who remove ticks from domestic animals with unprotected fingers. Children, elderly persons, and immunocompromised persons may be at greater risk of infection and should avoid this procedure.

5. After removing the tick, thoroughly disinfect the bite site and wash your hands with soap and water.
6. You may wish to save the tick for identification in case you become ill. Your doctor can use the information to assist in making an accurate diagnosis. Place the tick in a 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. See “First Aid and Medical Treatment” information below.

**Note:** Folklore remedies such as 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, increasing the chances of transmitting the pathogen. These methods of tick removal should be avoided. In addition, a number of tick removal devices have been marketed, but none are better than a plain set of fine tipped tweezers.

Previously infected individuals are not conferred immunity – re-infection from future tick bites can occur even after a person has contracted a tick-borne disease.

#### 3.40.3.5 First-Aid and Medical Treatment

Tick bites should always be treated with first-aid. Clean and wash hands and disinfect the bite site after removing embedded tick. Consult a healthcare professional if infection or symptoms and effects of tick-borne illnesses are developing.

Medical treatments for tick-borne infections include antibiotics and other medical interventions. Diagnosis of specific illness involves both clinical and laboratory confirmations. Preventive antibiotic treatment in non-ill individuals who have had a recent tick bite is recommended in specific cases only.

**For CH2M HILL employees** who have experienced a tick bite due to work-related activities, CH2M HILL has a protocol in place to test ticks that have been removed from an employee’s body for the presence of *Borrelia burgdorferi*. Employees should contact the IMRTW at WorkCare at 866-893-2514 for assistance with the management of the tick bite. (See **Attachment 11** of this HSP, for details). The employee will be given instructions on how to send the tick to the Clongen Laboratory for analysis as determined by Work Care. If the results indicate that the tick is positive for Lyme disease, they will be referred to a medical provider for further medical evaluation and treatment. WorkCare will follow up with each CH2M HILL employee who reports a tick bite and is at risk of developing Lyme disease to monitor for symptoms and refer them to a medical provider for evaluation and treatment as necessary.

#### **Tick Analysis Procedure for Lyme disease:**

- For tick removal, follow the instructions in your tick removal kit using a fine pointed pair of tweezers. If the tick is alive, place it in two layered zip-lock bags. It is highly recommended that you wear gloves when removing the tick from the skin to avoid infection.
- It is important to remove the entire tick and place it in a zip-lock bag.
- Place the zip-lock bag in an envelope and fill out the sample Clongen submission form included in **Attachment 11** of this HSP as directed by Work Care. Please identify

yourself as a CH2M HILL employee by completing all the contact information in the form. The cost of the analysis will be paid for by CH2M HILL; you do not have to use a credit card or check. The account has an assigned purchase order that is billed directly to Work Care for payment.

Within 1 to 3 days, you will be contacted by Work Care to discuss the tick analysis results, and to discuss any further need for medical evaluation.

\* For work-related injuries or illnesses to CH2M HILL personnel, inform the AGVIQ-CH2M HILL Project Manager (overall) and the AGVIQ-CH2M HILL HSM and help Human Resources administrator complete a HITS (Hours & Incident Tracking System) Form. HITS must be completed within 24 hours of incident.

For **AGVIQ** employees, who have been bitten by a tick, contact our AGVIQ supervisor and HSPA for management and support of an incident of this type.

### 3.40.4 Fire Ants

(Reserved)

### 3.40.5 Spiders - Brown Recluse

The brown recluse is regarded by many as the most dangerous spider in the United States. Poisonings due to spider bites are rare in Northern New England. The brown recluse spiders are not native to this region, however, sometimes they are in with produce, on a truck, in a car or in boxes after people visit or move here from other parts of the country.

Brown Recluse Spiders are usually 1 inch or larger in size, including the legs and can grow as large as 3 inches. Young Brown Recluse spiders are smaller and somewhat lighter in color. Brown recluse spider bites don't always hurt right away.



In fact, you may not know that you have been bitten until other symptoms appear. Symptoms of a brown recluse spider bite may include the following:

- Reddened skin followed by a blister that forms at the bite site.
- Mild to intense pain and itching for 2 to 8 hours following the bite.
- An open sore with a breakdown of tissue (necrosis) that develops within a few hours to 3 to 4 days following the bite and the area may become painful, itchy, hot, swollen, red and tender. An irregular ulcerous sore, caused by necrosis, will often appear that is from 1/4 inch to 10 inches in diameter. Prompt attention is the best defense against preventing the necrosis. The wound is often described as being reddish and surrounded by a bluish area with a narrow whitish separation in between the red and the blue. This gives it the famous "bull's eye" pattern. In just hours, a bite from the highly venomous Brown Recluse spider can create blisters and cause tissue damage.

Some people have a severe, systemic (whole-body) reaction to brown recluse spider bites, including the rapid destruction of red blood cells and anemia. Signs and symptoms include:

- Fever and chills
- Skin rash all over the body with many tiny, flat purple and red spots
- Nausea or vomiting
- Joint pain

If you think you have been bitten by a brown recluse spider:

- Remain calm. Too much excitement or movement will increase the flow of venom into the blood.
- Try to collect the spider, without being bitten, (even a mangled specimen has diagnostic value), if possible, for positive identification by a spider expert. A plastic bag, small jar, or pill vial is useful and no preservative is necessary, but rubbing alcohol helps to preserve the spider.
- Apply a cool, wet cloth to the bite or cover the bite with a cloth and apply an ice bag to the bite.
- Do not apply a tourniquet. It may cause more harm than benefit.
- Try to positively identify the spider to confirm its type.
- Seek prompt medical attention.

A brown recluse bite can be serious and will likely require immediate medical care. Seek medical attention if you believe you have been bitten by a recluse spider, especially if severe symptoms develop throughout your body or an open sore and necrosis develop. A brown recluse spider bite is diagnosed through a physical examination and questions about the bite. You should be prepared to describe the spider, where and when the bite took place, and what you were doing at the time. Your health professional will ask what your main symptoms are, when they began, and how they have developed, progressed, or changed since the bite.

### 3.40.6 Spiders – Black Widow

Like the Brown Recluse, the Black Widow spider is not indigenous to New England. Females range from 8 to 15 mm in body length; males are smaller, sometimes very small (2 mm). Most have globose, shiny abdomens that are predominantly black with red markings (although some may be pale and/or have lateral stripes), with moderately long, slender legs. These spiders are nocturnal and build a three-dimensional tangled web, often with a conical tent of dense silk in a corner where the spider hides during the day. In nature, most species are found under rocks and logs, but they readily adapt to human-altered environments, where they are most commonly found in outbuildings (sheds, barns, privies), water meter holes, nursery cans, and under any



item or structure (e.g., barbecue grill, slide, sand box) that has been undisturbed for a lengthy period. Formerly, most bites by black widows (almost all by female spiders)

occurred in outhouses, but presently, widow bites occur most frequently when the spider is trapped against human skin, either by reaching under objects where the spider is hiding or when putting on clothing, gloves or shoes containing the spider. Widow spiders are generally very timid and only bite in self-defense when they accidentally contact humans.

Bite symptoms are systemic, spreading through the lymphatic system, and usually start about 1 to 3 hours after the bite. The most common symptoms are intense pain, rigid abdominal muscles, muscle cramping, malaise, local sweating, nausea, vomiting, and hypertension. Other symptoms may include tremors, labored breathing, restlessness, increased blood pressure, and fever. If left untreated, widow bite symptoms usually last 3 to 5 days.

If bitten, remain calm, and immediately seek medical attention (contact your physician, hospital and/or poison control center). Apply an ice pack directly to the bite area to relieve swelling and pain. Try to collect the spider, without being bitten, (even a mangled specimen has diagnostic value), if possible, for positive identification by a spider expert. A plastic bag, small jar, or pill vial is useful and no preservative is necessary, but rubbing alcohol helps to preserve the spider. A hospital stay may be recommended, particularly for those with a heart condition or with health problems. A physician may administer a specific antivenin to counteract the venom or calcium gluconate to relieve pain. Calcium gluconate and/or antivenin may be administered to relieve or counteract symptoms.

### **3.40.7 Bloodborne Pathogens**

**(Reference SOP HSE-202, *Bloodborne Pathogens*)**

Bloodborne pathogens are pathogenic microorganisms present in human blood or other potentially infectious material that can cause disease. These pathogens include, but are not limited to, the Hepatitis B Virus (HBV) and the Human Immunodeficiency Virus (HIV). Other potentially infectious material includes any human body fluid that is visibly contaminated with blood, such as saliva or vomit. It also includes all body fluids in situations where it is difficult or impossible to differentiate between body fluids, such as during an emergency response and any unfixed tissue (other than intact skin) from a human (living or dead).

In emergency medical situations, certain employees may need to render first aid as a collateral duty in response to workplace accidents or injuries. This category includes the SSHO, site managers/supervisors, or individuals certified in FA and CPR and shall have received training in exercising universal precautions against exposure to bloodborne pathogens as a component to FA/CPR training, which meets the intent of 29CFR1910.1030. This employee training is also complemented by other regularly scheduled employer training curriculums that are typically executed for the HAZWOPER industry, regulated under 29CFR1910.120/29CFR1926.26. The only worker exposure to bloodborne pathogens anticipated for this project will potentially be to those individuals providing FA/CPR to an injured or "down" worker.

However, additional worker training programs in to bloodborne pathogens may also be required when it is expected that employees could contact landfill waste or other waste streams containing potentially infectious material. This situation is not reasonably expected for this project.

To eliminate or minimize employee exposure to bloodborne pathogens, workers who may be exposed to bloodborne pathogens or potentially infectious material must implement the following hazard control measures.

Employees expected to render first aid shall be cognizant of and adhere to the following with regard to potential exposure to bloodborne pathogens:

- First aid kits and a Bloodborne Pathogens Protection Kit shall be immediately available at the site. The kit is commercially available through most safety or medical supply vendors.
- These kits shall contain gloves, masks, CPR protectors, biohazard disposal bags, antiseptic cleanser, splash-proof goggles, towels, wipes, and an absorbent powder to clean up spills. Gloves, masks, and other PPE measures must be donned by personnel responding to emergency or first aid situations where exposure to Bloodborne Pathogens could occur.
- A portable eye wash station or means of conducting eye washing or flushing shall be readily available at each designated project site location.
- Always wash your hands and face with antiseptic soap and running water after contacting potentially infectious material. If washing facilities are unavailable, use an antiseptic cleanser with clean paper towels or moist towelettes. When antiseptic cleansers or towelettes are used, always rewash your hands and face with soap and running water as soon as available. **Do not consume food or beverages, smoke, chew tobacco, or perform another hand to eye/face/mouth activity until after thoroughly cleaning your hand (with antiseptic soap and water), then your face and only after the employee has removed themselves from the designated work area that contains materials that can be reasonably considered being contaminated with bloodborne pathogens.**
- Use universal precautions when dealing with materials or situations where there is a potential for bloodborne pathogens. Universal precaution is an approach to infection control whereby all human blood and potentially infectious material are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.
- Personnel who may be exposed to Bloodborne Pathogens should **review and implement all applicable components of CH2M HILL SOP # HSE&Q 202, Bloodborne Pathogens.**

### 3.40.8 Mosquito Bites

Because of the recent detection of the West Nile Virus in the United States, it is recommended that **preventive measures** be taken to reduce the probability of being bitten by mosquitoes whenever possible. Mosquitoes are believed to be the primary source for exposure to the West Nile Virus as well as several other types of encephalitis. The following guidelines should be followed to reduce the risk of these concerns for working in areas where mosquitoes are prevalent.

- Stay indoors at dawn, dusk, and in the early evening.
- Wear long-sleeved shirts and long pants whenever you are outdoors.

- Spray clothing with repellents containing pyrethrum or DEET because mosquitoes may bite through thin clothing.
- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 35% DEET. DEET in high concentrations (greater than 35%) provides no additional protection.
- Repellents may irritate the eyes and mouth, so avoid applying repellent to the hands.
- Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer's DIRECTIONS FOR USE, as printed on the product.

Note: Vitamin B and "ultrasonic" devices are NOT effective in preventing mosquito bites.

#### 3.40.8.1 Symptoms of Exposure to the West Nile Virus

Most infections are mild, and symptoms include fever, headache, and body aches, occasionally with skin rash and swollen lymph glands. More severe infection may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and, rarely, death.

The West Nile Virus incubation period is from 3 to 15 days.

If you have any questions or to report any suspicious symptoms, contact the project Health and Safety Manager.

#### 3.40.9 Rabid Animals

Encounters with a rabid animal can lead to rabies transmission when virus from the animal's saliva, brain tissue, or spinal fluid enters open cuts or wounds in skin or mucous membranes. Therefore, not every encounter with a rabid animal is a true exposure requiring intervention. Treatment is often provided unnecessarily to people who have encountered but had no true exposure to a potentially rabid animal.

Any penetration of the skin by an animal's teeth is considered a "bite exposure." Local wound care should be performed immediately on anyone bitten by an animal. Local treatment of wounds involving immediate and extensive washing of all bite wounds, scratches, or other sites of potential exposure for 10 minutes with soap and water is arguably the most important measure for preventing rabies following an exposure to a rabid animal.

Experiments done in animals suggest that thorough and vigorous cleansing to the depth of the wound with a 20% soap solution can reduce the risk of developing rabies. Tetanus booster vaccine (Td) should be given if indicated. A health care provider should be consulted to determine whether other measures are necessary. When a bite exposure has been determined, laboratory testing of the animal, if available, may be indicated depending upon the circumstances of the exposure (such as whether it was provoked or not) and the species involved. The risks associated with bites from different animals vary from place to place. For work on this particular contract, contact with rabid dogs, cats, raccoons, and rats could be possible.

"Non-bite exposures" include any scratches, abrasions, or contamination of mucous membranes by an infected animal's saliva, brain tissue, or spinal fluid. Other types of

contacts (such as with the blood, urine, feces, or fur of an animal) would not by themselves be considered exposures capable of transmitting rabies even if the animal were known to be rabid. The virus is not hardy; once dry, saliva containing rabies virus is considered non-infectious.

# 4.0 Behavior Based Loss Prevention System

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## (Reference SOP # HSE&Q 103, Behavior Based Loss Prevention System)

A Behavior Based Loss Prevention System (BBLPS) has been implemented on this project. BBLPS is a system to prevent or reduce losses using behavior-based tools and proven management techniques to focus on behaviors or acts that could lead to losses.

The four basic loss prevention tools that will be used to implement the BBLPS on this project include:

- Activity Hazard Analysis (AHA)
- Pre-Task Safety Plans (PTSP)
- Loss Prevention Observations (LPO)
- Loss and Near Loss Investigations (NLI)
- Drug Free Workplace Program (DFWP)

The Project Manager and/or AGVIQ-CH2M HILL individual responsible for site operations (site supervisor) are responsible for implementing the BBLPS on the project site and ensuring that project team members have received the BBLPS training prior to initiating field activities. These personnel typically delegate authority to the SSHO for the project specific implementation of the BBLPS, but the Project Manager and/or individual responsible for site operations remains accountable for its implementation. The SSHO will only verify the subcontractor's implementation of their AHAs and PTSPs for their assigned work.

Should it be determined that AGVIQ-CH2M HILL project personnel have not received a BBLPS orientation, the Superintendent or Project Manger shall contact their designated safety representative so this orientation can be provided. Subcontractors may not necessarily be required to receive this AGVIQ-CH2M HILL BBLPS orientation, but shall be informed of, be covered by, or separately implement the four basic loss prevention tools of the BBLPS.

In an effort to provide a safe and healthy workplace for all program participants, AGVIQ-CH2M HILL promotes and implements a Drug Free Workplace Program (DFWP). All AGVIQ-CH2M HILL personnel must participate in and adhere to the requirements of the DFWP.

## 4.1 Activity Hazard Analysis

An AHA defines the activity being performed, the hazards posed, and control measures required to perform each major Definable Feature of Work (DFOW) or "safety sensitive" operations. AHAs shall be implemented before initiating any major Definable Feature of Work (DFOW) or "safety sensitive" activity posing H&S hazards to project personnel. AHAs for each Definable Feature of Work (DFOW) or safety sensitive operations anticipated for this project have been developed and included in **Attachment 7** of this HSP.

These AHAs identify the primary DFW or safety sensitive operation, along with potential H&S hazards and recommended hazard control measures. In addition, a listing of the equipment to be used to perform the activity, inspection requirements for the task and personnel training and medical monitoring requirements for the proper execution of each identified activity.

AHAs for this project have been prepared using the Project-Specific, General, Biological Hazards, the Activity Hazard Analysis Table (Table 1-1) and applicable CH2M HILL, Inc. Standards of Practice (SOPs) as the basis for their development. Any AHAs that are not included in **Attachment 7** and must be developed in the field during ongoing work should be prepared or reviewed by a designated AGVIQ-CH2MHILL safety representative prior to implementation.

AGVIQ-CH2M HILL subcontractors will be required to provide AHAs specific to their scope of work, for review by the AGVIQ-CH2MHILL health and safety program representatives or qualified site specific safety representatives. Each subcontractor will submit AHAs applicable to their assigned on-site activities, as defined in their work plan/scope of work, along with their project-specific HSP. When additions or changes in anticipated AGVIQ-CH2MHILL or subcontractor field activities occur, or when additional/different hazards are encountered from that which was expected, then a new AHA will be prepared or modifications will be made to the existing AHA to address the additional hazards or control measures.

Site workers review (or are briefed on the content of) a task specific AHA before implementing the work. Worker input should be solicited where ever possible and included in the AHA. After employees review (or are briefed on the content of) each AHA applicable to their assigned task(s), they will acknowledge that this review was completed by adding their printed names, signatures, and the dates that the material was delivered to them or reviewed by them on the last page of the AHA form.

The AHA applicable to the current site operation(s), work phase or safety sensitive function must remain posted in a conspicuous place (e.g., project construction trailer, weather proof bulletin board, etc.) that all site or facility personnel can access. When the most current AHA is not in use and not required to be posted, these completed AHAs shall be filed on-site in a neat and organized manner for review are kept onsite in a neat and organized manner for review by NAVFAC POCs or the AGVIQ-CH2MHILL project management or program management team, or health and safety representatives, if requested.

At the end of project operations, all completed hard copies of AHAs are included in the final project record.

## 4.2 Pre-Task Safety Plans

Daily safety meetings are held with all designated project site personnel in attendance to review the potential hazards that may be associated with daily work assignments. These meetings set forth various hazard control measures or policies, procedures or requirements that must be implemented by project staff to reduce or eliminate workplace incidents that could be associated with daily scheduled work. The topics developed and delivered during each production day safety meeting are documented on an AGVIQ-CH2MHILL Pre-Task

Safety Planner (PTSP). The PTSPs are held between the site line supervisor and work crews and are designed to focus on eliminating identified hazards associated with daily assigned work. An example PTSP is included in **Attachment 8** of this HSP.

Daily safety topics typically include task-specific or site hazards and associated hazard control measures, health and safety processes, or “hazardous conditions” discovered and corrected and/or controlled during a previous work event that may still be applicable to the current daily production goals. Additionally, names of personnel, types of tools and equipment that will be used to perform the assigned daily task(s) are listed, along with the hazards posed and required H&S procedures that have been identified in the task specific AHAs or the HSP and are incorporated into each PTSP.

Preparation and delivery of the PTSP may be delegated to the Site Safety and Health Officer (SSHO) by the site supervisor to facilitate site operations. At the start of each day’s activities, the line supervisor or SSHO completes a PTSP. Ideally, input from the work crew is solicited and integrated into the development and delivery of each PTSP. Implementing daily PTSPs enhances worker participation in the recognition and control of hazardous site conditions or undesirable site acts, while reinforcing the task-specific required H&S procedures with the crew each work day. In the event that more than one type of project task is scheduled in any one daily production event, multiple PTSPs may need to be completed and implemented.

After the delivery of each PTSP, all personnel in attendance at the daily safety meeting acknowledge the delivered material with the addition of their printed names, signatures, and the date on which the material was delivered to them on the last page of the form. Completed PTSPs are kept on site in a neat and organized manner for review by management or the client, as deemed necessary.

Completed PTSPs are kept onsite in a neat and organized manner for review by NAVFAC POCs or the AGVIQ-CH2MHILL project management or program management team, or health and safety representatives, if requested. The project manager and the site line supervisor may establish a process by which these completed PTSPs are scanned and emailed for inclusion in the electronic project file, where email communication capability is available. Where email capability is not available other suitable distribution methods shall be arranged between the overall project manager and the site supervisor.

At the end of the project or facility operations, all completed PTSP hard copies are included in the final project record.

## 4.3 Loss Prevention Observations

A Loss Prevention Observation (LPO) is a tool to be used by management, site supervisors, and SSHOs to determine whether workplace behaviors, acts, and conditions are consistent with established H&S procedures, project site-specific HSP requirements, or other established health and safety standards. An LPO may also be completed by an individual work crew member to initiate necessary corrective actions, to identify a work crew member’s positive performance or contribution, or to report an undesirable act that would endanger the employee or other co-workers or result in a loss. Completion of the LPO

provides a mechanism for management to reinforce positive actions for work practices performed correctly, while also identifying and eliminating work procedures, site conditions, or behaviors that could result in eventual losses.

LPOs can be completed by any employee involved with or observing site operations, but are typically prepared by the site supervisor, SSHO, or project manager using the LPO form found in **Attachment 9** of this HSP. The LPO is implemented as a comparison of the actual execution of work process observed against established work procedures identified in the project-specific HSP, AHAs, established health and safety policies and procedures, or regulatory standards.

**One LPO** shall be **completed weekly** and forwarded to the overall AGVIQ-CH2MHILL Project Manager and their designated management team, the CH2MHILL Administrative Assistant designated to track project labor hours and completed LPO, as well as the designated project HSPA lead where email capability is available. Where email capability is not available other suitable distribution methods shall be arranged between the overall project manager and the site supervisor. When severe or critical deficiencies are observed by the LPO process, the project manager, site supervisor, or SSHO has a duty to notify the project manager and Chain of Command personnel of the condition for further review and development of corrective action requirements.

Completed LPOs are kept onsite in a neat and organized manner for review by management or NAVFAC, as deemed necessary. At the end of the project or facility operations, all completed LPO hard copies are included in the final project record.

### 4.3.1 Deficiency Tracking System

On NAVFAC contracts where adherence to the US Army Corps of Engineers' EM 385-1-1, "Safety and Health Requirements Manual" is required in addition to Occupational Safety & Health Administration (OSHA) regulations, the site supervisor is responsible for ensuring that the a "Deficiency Tracking System" or log is maintained. The deficiency tracking system is used to identify and monitor the status of safety and health "deficiencies" observed at the project-specific location, in chronological order. The deficiency tracking system includes the following information:

- 1) Date deficiency identified
- 2) Description of deficiency
- 3) Name of person responsible for correcting deficiency
- 4) Projected resolution date
- 5) Date actually resolved

The deficiency tracking system or log is posted on a project bulletin board or other conspicuous place commonly accessed by project or facility personnel, updated daily, and available for review by the NAVFAC POCs or by AGVIQ-CH2MHILL Project Management, Senior Management or Health and Safety Representatives. At project or facility sites where the use of a Deficiency Tracking System is required, this log supplements the LPO process.

At the end of the project, or when facility operations are completed, hard copies of the deficiency tracking system data or logs are included in the final record.

## 4.4 Loss/Near-Loss Investigations

Loss/near-loss investigations will be performed for the all AGVIQ-CH2M HILL and subcontractor incidents involving:

- Person injuries/illnesses and near-miss injuries
- Equipment/property damage
- Spills, leaks, regulatory violations
- Motor vehicle accidents

The causes of loss and near-loss incidents are similar, so by identifying and correcting the causes of near-loss incidents, future loss incidents may be prevented. The following is the loss/near-loss investigation process:

- Gather all relevant facts, focusing on fact-finding, not fault-finding, while answering the who, what, when, where, and how questions.
- Draw conclusions, putting facts together into a probable scenario.
- Determine incident root cause(s), which are basic causes on why an unsafe act/condition existed.
- Develop and implement solutions, matching all identified root causes with solutions.
- Communicate incident as a lesson learned to all project personnel.
- File follow-up on implemented corrective action to confirm solution is appropriate.

Site Supervisors/SSHO will perform an incident investigation as soon as practical after incident occurrence during the day of the incident, for all loss and near-loss incidents that occur on the project. Loss and near-loss incident investigations will be performed using the following incident investigation forms provided in **Attachment 10**:

- Incident Report Form (IRF) \*
- Incident Investigation Form
- Root Cause Analysis Form

\* For work-related injuries or illnesses to CH2M HILL personnel, Inform AGVIQ-CH2M HILL Project Manger overall and AGVIQ-CH2M HILL HSPA/CIH contact and help Human Resources administrator complete a HITS (Hours and Incident Tracking System) Form. HITS must be completed within 24 hours of incident.

All loss and near-loss incidents involving personal injury, property damage in excess of \$1,000, or near-loss incidents that could have resulted in serious consequences will be investigated by completing the incident investigation forms and submitting them to the Project Manager and HSPA within 24 hours of incident occurrence. A preliminary Incident Investigation and Root Cause Analysis will be submitted to the Project Manager and HSPA/CIH within 24 hours of incident occurrence. The final Incident Investigation and Root Cause Analysis will be submitted after completing a comprehensive investigation of the incident.

## 4.5 Drug-Free Workplace Program

**(Reference SOP # HSE&Q 105, Drug Free Workplace)**

AGVIQ-CH2M HILL does not tolerate illegal drugs, or any use of drugs, controlled substances, or alcohol that impairs an employees work performance or behavior. AGVIQ-CH2M HILL has established a policy that its employees and subcontractors will not be involved in any manner with the unlawful manufacture, distribution, dispensation, possession, sale, or use of illegal drugs in the workplace. The use or possession of alcohol in the workplace is also prohibited. Any violation of these prohibitions may result in discipline or immediate discharge.

In order to remain consistent with the requirements of the DFWP, review CH2M HILL, Inc. Standard of Practice HSE 105, *Drug-Free Workplace*, for more information.

AGVIQ-CH2M HILL reserves the right to randomly test program participants in accordance with the conditions of the DFWP.

# 5.0 Personal Protective Equipment

Personal protective equipment (PPE) specifications are listed in Table 5-1 for anticipated Project Operations.

Table 5-1 Personal Protective Equipment <sup>a</sup>				
Task	Level	Body	Head	Respirator <sup>b</sup>
<ul style="list-style-type: none"> <li>Mobilization &amp; Demobilization operations</li> <li>Land and Utility Survey Activities to support the remedial objectives where site TPH-GRO constituents <u>are not disturbed</u> or there <u>is no potential</u> site worker exposure to TPH-GRO constituents or other identified site COCs.</li> <li>Installation of Erosion and Sediment Control (ESC) measures, where site TPH-GRO constituents <u>are not disturbed</u> or there <u>is no potential</u> site worker exposure to TPH-GRO constituents or other identified site COCs.</li> <li>Various site restoration activities (backfilling, seeding) where site soil or water impacted by TPH-GRO constituents <u>are not disturbed</u> or there <u>is no potential</u> site worker exposure to TPH-GRO constituents or other identified site COCs.</li> <li>Demolition of Sabino Hill Rake Tower structure assuming there are no lead paint or asbestos exposures/hazards.</li> </ul>	D	<ul style="list-style-type: none"> <li>Designated and appropriate work clothes</li> <li>Steel toe work boots that provide sufficient ankle support</li> <li>Work gloves (cut resistant), reflective safety vest</li> <li>Reflective traffic vest</li> </ul>	<ul style="list-style-type: none"> <li>Hardhat<sup>c</sup></li> <li>Safety glasses</li> <li>Hearing protection (as applicable)<sup>d</sup></li> </ul>	<ul style="list-style-type: none"> <li>None required</li> </ul>
<p>Any function identified in this HSP where potential dermal contact with site COCs <b>IS limited to the hands only.</b></p> <ul style="list-style-type: none"> <li>Mobilization operations where TPH-GRO constituents <u>are disturbed</u> or there <u>is a potential</u> site worker exposure to TPH-GRO constituents or other identified site COCs.</li> <li>Land and Utility Survey Activities to support the remedial objectives where site TPH-GRO constituents <u>are disturbed</u> or there <u>is a potential</u> site worker exposure to TPH-GRO constituents or other identified site COCs.</li> <li>Installation of Erosion and Sediment Control (ESC) measures, where site TPH-GRO constituents <u>are disturbed</u> or there <u>is a potential</u> site worker exposure to TPH-GRO constituents or other identified site COCs.</li> <li>Re-route underground utilities located in the area of the excavation where site TPH-GRO constituents <u>are disturbed</u> or there <u>is a potential</u> site worker exposure to TPH-GRO constituents or other identified site COCs.</li> <li>Above ground demolition of UST Fuel Island and ancillary features.</li> <li>Removal and disposal of three 10,000 gallon UST and associated piping.</li> <li>Installation and removal of the excavation sheeting/shoring system required to facilitate removal of soil impacted by TPH-GRO.</li> <li>Removal and management of soil and groundwater of soil impacted by TPH-GRO from the excavation area such that soils above 200 mg/kg for TPH – GRO in soil can be disposed of, inclusive of confirmation or waste characterization sampling activities.</li> <li>Various site restoration activities (backfilling, seeding) where site soil or water impacted by TPH-GRO constituents <u>are disturbed</u> or there <u>is a potential</u> site worker exposure to TPH-GRO constituents or other identified site COCs.</li> <li>Excavation and management of lead impacted soil beneath and adjacent to the Sabino Hill Rake Tower structure</li> </ul>	Modified D <sub>1</sub>	<ul style="list-style-type: none"> <li>Designated and appropriate work clothes;</li> <li>Steel toe work boots that provide sufficient ankle support (preferable leather)</li> <li>Work gloves (cut resistant)</li> <li>Reflective safety vest;</li> <li>Inner surgical-style nitrile and outer chemical resistant nitrile gloves.</li> </ul>	<ul style="list-style-type: none"> <li>Hardhat<sup>c</sup></li> <li>Safety glasses</li> <li>Ear protection (as applicable)<sup>d</sup></li> <li>Face shields (as applicable)</li> </ul>	<ul style="list-style-type: none"> <li>None required.</li> </ul>
<p>Any function identified in this HSP where potential dermal contact with site COCs is <b>NOT</b> limited to the hands only.</p> <ul style="list-style-type: none"> <li>Land and Utility Survey Activities to support the remedial objectives where site soil or water impacted by TPH-GRO constituents <u>are disturbed</u> or there <u>is a potential</u> site worker exposure to TPH-GRO constituents or other identified site COCs.</li> <li>Installation of Erosion and Sediment Control (ESC) measures, where site soil or water impacted by TPH-GRO constituents <u>are disturbed</u> or there <u>is a potential</u> site worker exposure to TPH-GRO constituents or other identified site COCs.</li> <li>Re-route underground utilities located in the area of the excavation where site soil or water impacted by TPH-GRO constituents <u>are disturbed</u> or there <u>is a potential</u> site worker exposure to TPH-GRO constituents or other identified site COCs.</li> <li>Pre-demolition removal of Oil/Hazardous Materials (OHM) from the UST system</li> <li>Above ground demolition of UST Fuel Island and ancillary features.</li> <li>Removal and disposal of three 10,000 gallon UST and associated piping.</li> <li>Installation and removal of the excavation sheeting/shoring system required to facilitate removal of soil impacted by TPH-GRO.</li> <li>Removal and management of soil and groundwater of soil impacted by TPH-GRO from the excavation area such that soils above 200 mg/kg for TPH – GRO in soil can be disposed of, inclusive of confirmation or waste characterization sampling activities.</li> <li>Various site restoration activities (backfilling, seeding) where site TPH-GRO constituents <u>are disturbed</u> or there <u>is a potential</u> site worker exposure to TPH-GRO constituents or other identified site COCs.</li> <li>Removal and management of encountered free phase petroleum product</li> <li>Pressure washing operations</li> <li>Excavation and management of lead impacted soil beneath and adjacent to the Sabino Hill Rake Tower structure</li> </ul>	Modified D <sub>2</sub>	<ul style="list-style-type: none"> <li><b>Coveralls:</b> Poly coated or uncoated Tyvek® chemical resistant disposable coveralls. Poly coated will be used for exposure to liquid chemicals or other dangerous substances.</li> <li><b>Boots:</b> Hard toe work boots that provide sufficient ankle support (preferable leather) with outer rubber boot covers or hard toe chemically resistant rubber boots with shank</li> <li><b>Gloves:</b> Inner &amp; Outer surgical-style nitrile chemical-resistant nitrile gloves.</li> </ul>	<ul style="list-style-type: none"> <li>Hardhat<sup>c</sup></li> <li>Safety glasses</li> <li>Ear protection (as applicable)<sup>d</sup></li> <li>Face shields (as applicable)</li> </ul>	<ul style="list-style-type: none"> <li>None required.</li> </ul>
<p>Contact HSPA/CIH prior to implementing Level C PPE upgrade.</p> <ul style="list-style-type: none"> <li>Site conditions where defined action levels are exceeded or where unknown site conditions are encountered and confirmed by AGVIQ-CH2M HILL HSPA/CIH that Level C PPE is required to ensure a negative exposure to site workers. Contact AGVIQ-CH2M HILL HSPA/CIH prior to upgrading to Level C PPE.</li> <li>Confined Space Entry operations during the cleaning of 21,000 gallon frac tanks.</li> <li>Removal of ACM from Sabino Hill Rake Tower structure prior to demolition (subcontracted)</li> <li>Removal of lead based paint to allow for the proper demolition of the Sabino Hill Rake Tower structure (subcontracted)</li> </ul>	C	<ul style="list-style-type: none"> <li><b>Coveralls:</b> Polycoated Tyvek®</li> <li><b>Boots:</b> Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with rubber boot covers</li> <li><b>Gloves:</b> Inner surgical-style nitrile and outer chemical resistant nitrile gloves.</li> </ul>	<ul style="list-style-type: none"> <li>Hardhat<sup>cc</sup></li> <li>Ear protection (as applicable)<sup>d</sup></li> <li>Spectacle inserts (as applicable)</li> </ul>	<ul style="list-style-type: none"> <li>Full or half face APR with organic vapor Cartridges and/or P100 HEPA combination cartridges for particulate exposures, as applicable to appropriate respiratory protection measures against specific site compounds. Only full face APRs shall be used for Confined Space Entry (CSE) operations.</li> </ul>

Table 5-1 Personal Protective Equipment <sup>a</sup> (continued)	
Reasons for Upgrading or Downgrading Level of Protection	
Upgrade <sup>f</sup>	Downgrade
<ul style="list-style-type: none"> <li>Request from individual performing tasks.</li> <li>Change in work tasks that will increase contact or potential contact with hazardous materials.</li> <li>Occurrence or likely occurrence of gas or vapor emission.</li> <li>Known or suspected presence of dermal hazards.</li> <li>Instrument action levels exceeded (when implemented).</li> </ul>	<ul style="list-style-type: none"> <li>New information indicating that situation is less hazardous than originally thought.</li> <li>Change in site conditions that decrease the hazard.</li> <li>Change in work task that will reduce contact with hazardous materials.</li> </ul>
<p><b>NOTES:</b></p> <p><sup>a</sup> Modifications are as indicated. AGVIQ-CH2M HILL will provide PPE only to AGVIQ-CH2M HILL employees.</p> <p><sup>b</sup> No facial hair that would interfere with respirator fit is permitted.</p> <p><sup>c</sup> Hardhat and splash-shield areas are to be determined by the SSHO.</p> <p><sup>d</sup> Ear protection should be worn when conversations cannot be held at distances of 3 feet or less without shouting.</p> <p><sup>e</sup> Cartridge change-out schedule is at least every 8 hours (or one work day), except if relative humidity is &gt; 85%, or if organic vapor measurements are &gt; midpoint of Level C range --then at least every 4 hours.</p> <p>If encountered conditions are different than those anticipated in this HSP, contact the HSPA/CIH. <b>Where AGVIQ-CH2M HILL personnel are required to use a respirator to provide respiratory protection, AGVIQ-CH2M HILL personnel shall receive respiratory protection awareness training. Contact the HSPA/CIH to receive this training, prior to using any respiratory protective device.</b></p> <p><sup>f</sup> Performing a task that requires an upgrade to a higher level of protection (e.g., Level D to Level D modified/Level C) is permitted only when the PPE requirements have been approved by the HSPA/CIH, and an SSHO qualified at that level is present.</p>	

# 6.0 Air Monitoring

Air monitoring requirements for anticipated project activities are listed in Table 6-1.

TABLE 6-1  
Air Monitoring Equipment Specifications

Instrument	Tasks	Action Levels <sup>a</sup>	Level of Protection or Action	Frequency <sup>b</sup>	Calibration	
Dust Monitoring – Visual Basis	<ul style="list-style-type: none"> <li>NEX Gas Station Excavation and soil handling operations</li> </ul>	No visible dust	Level D, Modified D1, or D2 as identified by Table 5-1 for dermal protection. Continue work	Whenever visual dust is observed	NA	
		Visible dust	Level D, Modified D1, or D2 as identified by Table 5-1 for dermal protection. Suspend operations, institute dust control measures (water application) until visible dust is abated. If dust can not be controlled to an acceptable condition (no visible dust), contact the HSPA/CIH before implementing respiratory protection devices.			
		Excavation of Lead impacted soil at the Sabino Hill Rake Tower site only.	Level D, Modified D1, or D2 as identified by Table 5-1 for dermal protection. Continue work			
MIE PDR 1000 or equivalent	<ul style="list-style-type: none"> <li>Excavation of Lead impacted soil at the Sabino Hill Rake Tower site only.</li> </ul>	0 – 1 mg/m <sup>3</sup> (TWA) (in worker BZ)	Level D, Modified D1, or D2 as identified by Table 5-1 for dermal protection. Continue work	Continuously during excavation, handling and loading of lead impacted soil.	Daily (before & after daily use or more frequently to verify accuracy)	
		1 – 2.5 mg/m <sup>3</sup> (TWA) (sustained 5 mins in worker BZ)	Level D, Modified D1, or D2 as identified by Table 5-1 for dermal protection. Institute dust control measures (water application) until total TWA (dust) concentration remains below 1 mg/m <sup>3</sup> .			
		> 2.5 mg/m <sup>3</sup> (TWA) (sustained 5 mins. in worker BZ)	Stop work, evacuate area for 10 minutes and recheck BZ and work area. If levels persist, consult HSPA/CIH for additional engineering and/or administrative controls and PPE requirements or before working in environments where COCs are potentially in excess of established Occupational Exposure Limits (OELs). If dust can not be controlled to an acceptable condition, contact the HSPA/CIH and the project team before using respiratory protection devices.			
Personnel/Perimeter Air Sampling  Lead via NIOSH 2017/OSHA 7	<ul style="list-style-type: none"> <li>Excavation and Handling of soil impacted by lead at the Sabino Hill Rake Tower site only.</li> </ul>	Lead < 30 ug/M <sup>3</sup> (in worker BZ)	Modified level D1 or D2 as identified by Table 5-1 for dermal protection.	Initially to verify a negative worker exposure to lead is in accordance with 29CFR1910.1025(l)/29CFR1926.62(l) and at the excavation perimeter to verify negative exposure to off site receptors. Additional exposure monitoring may be required in accordance with AGVIQ-CH2MHILL CIH recommendations to address unanticipated site conditions.	Daily (before and after each sample collection event)	
		Lead > 30 ug/M <sup>3</sup> (in worker BZ)	<b>Level C PPE will be warranted if airborne contaminant levels continue to be at or above the established action levels in the worker Breathing Zone. Contact the AGVIQ-CH2MHILL CIH before upgrading to Level C PPE.</b>			Upon initial restart of work if established action level is exceeded to verify negative worker exposure lead is in accordance with 29CFR1910.1025(l)/29CFR1926.62(l) and at the excavation perimeter to verify negative exposure to off site receptors.
Photo Ionization Detector (PID) 10.6 eV lamp or higher	<ul style="list-style-type: none"> <li>Any activities where soil or groundwater is removed, disturbed or handled that is impacted by TPH-GRO constituents or other identified site COCs. (i.e. soil excavation &amp; handling, groundwater removal, sheeting installation, underground utility line relocation, dewatering operations, soil loading)</li> <li>Pre-demolition removal and handling/management of Oil/Hazardous Materials (OHM) from the UST system</li> <li>Removal of all the UST system components (USTs, canopy, piping, fuel island, concrete pads etc)</li> <li>Pressure washing operations</li> <li>CSE Operations</li> </ul>	0 – 1 ppm (in worker BZ)	Level D, Modified D1, or D2 as identified by Table 5-1 for dermal protection	1) Initially during start up of a task, upon opening ground of each water monitoring well heads/cover, 2) During any activity where unusual odors, vapors, discolored soil/sediment or free phase product is observed during the execution of tasks.	Daily (before & after daily use or more frequently to verify accuracy)	
		1 - 5 ppm (sustained 5 mins in worker BZ)	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> as identified by Table 5-1 for dermal protection and begin compound specific monitoring using Sensidyne indicator tubes. (See below).			Continuously or until 1) level is below 1 ppm, 2) Compound specific action level is exceeded (see below).
		> 5 ppm (sustained 5 mins. in worker BZ)	Stop work. Evacuate area for 10 minutes and recheck BZ and work area and verify Action Levels are not exceeded. If levels persist or Action Levels are exceeded, consult HSPA/CIH for proper engineering and/or administrative controls and PPE requirements or before working in environments where COCs are potentially in excess of established Occupational Exposure Limits (OELs).			1) Continuously upon re-start of work to verify PID level 0-1 ppm in WBZ and 2) Until it is determined that compound specific concentrations are less than the established Action Level.

TABLE 6-1  
Air Monitoring Equipment Specifications

Instrument	Tasks	Action Levels <sup>a</sup>	Level of Protection or Action	Frequency <sup>b</sup>	Calibration
4 Gas Meter with Combustible Gas Indicator (%LEL) , %O <sub>2</sub> , Carbon Monoxide (CO) and Hydrogen Sulfide (H <sub>2</sub> S) sensors	<ul style="list-style-type: none"> <li>Any activity where a potential Lower Explosive Limit or O<sub>2</sub> deficient/enriched atmospheres may exist in a work environment.</li> <li>All CSE operations</li> <li>All excavation operations below 4' bgs and where the potential for hazardous atmospheres may exist.</li> <li>Welding/cutting operations where the potential for hazardous atmospheres may exist.</li> </ul>	<ul style="list-style-type: none"> <li>O<sub>2</sub> 19.5 – 23.5%</li> <li>LEL 0%</li> <li>CO 0 ppm</li> <li>H<sub>2</sub>S 0 ppm</li> </ul>	Level C during CSE operations where Action Levels are not exceeded. Contact the HSM/CIH before using Level C PPE for confined spaces operations. <b>The use of Level C PPE must be evaluated by the HSPA/CIH.</b>	When PID reading > 1 ppm and until PID reading < 1 ppm or where potential explosive conditions exist or continuously during CSE operations.	Daily (before & after daily use or more frequently to verify accuracy)
<b>Sensidyne gas detection tube pump</b> with appropriate indicator tubes Benzene = 118SE (w/ prefilter) Ethylbenzene = 124SB Toluene = 179S Xylene =143SB  <b>Note: For use of any gas detection indicator tubes for Benzene indicator tubes, ensure that any “pre-filter” tubes are secured to reduce cross sensitivity/false positive readings.</b> <b>Alternate Methods:</b> <b>Draeger CMS</b> <b>Draeger gas detection tube hand pump</b> with appropriate indicator tubes. Consult HSM for prior to selecting alternate air monitoring methods.	<ul style="list-style-type: none"> <li>Any activities where soil or groundwater is removed, disturbed or handled that is impacted by TPH-GRO constituents or other identified site COCs. (i.e. soil excavation &amp; handling, groundwater removal, sheeting installation, underground utility line relocation, dewatering operations, soil loading)</li> <li>Pre-demolition removal and handling/management of Oil/Hazardous Materials (OHM) from the UST system</li> <li>Removal of all the UST system components (USTs, canopy, piping, fuel island, concrete pads etc)</li> <li>Pressure washing operations</li> <li>CSE Operations</li> </ul>	<b>When PID is &gt; 1 ppm sustained 5 mins in worker BZ</b> <ul style="list-style-type: none"> <li>Benzene &lt; 0.5 ppm</li> <li>Ethyl Benzene &lt; 50 ppm</li> <li>Toluene &lt; 50 ppm</li> <li>Xylene &lt; 50 ppm</li> </ul> <hr/> <b>When PID is &gt; 1 ppm sustained 5 mins in worker BZ</b> <ul style="list-style-type: none"> <li>Benzene &gt; 0.5 ppm but &lt; 5.0 ppm</li> <li>Ethyl Benzene &gt;50 ppm &lt; 800 ppm</li> <li>Toluene &lt; 50 ppm &lt; 500 ppm</li> <li>Xylene &lt; 50 ppm &lt; 900 ppm</li> </ul>	Level D, Modified D1, or D2 as identified by Table 5-1 for dermal protection.  Note: Where Benzene, Ethyl benzene, Toluene or Xylene concentrations are less then the defined action levels but could be attributing to adverse worker side effects (nausea, eye irritation, dizziness, headache) contact the Program CIH to discuss the need to implement appropriate engineering controls or PPE measures to reduce or eliminate these side effects.	1) When PID reading > 1 ppm and until PID reading < 1 ppm 2) Restart of work to verify compound specific levels are below action levels.	NA
<ul style="list-style-type: none"> <li><b>Benzene</b> Personal air sampling in accordance with OSHA 12 or 1005 or NIOSH 1500, 1501, 3700 or 3800 Methods</li> </ul>	<ul style="list-style-type: none"> <li>Any activities where soil or groundwater is removed, disturbed or handled that is impacted by TPH-GRO constituents or other identified site COCs. (i.e. soil excavation &amp; handling, groundwater removal, sheeting installation, underground utility line relocation, dewatering operations, soil loading)</li> <li>Pre-demolition removal and handling/management of Oil/Hazardous Materials (OHM) from the UST system</li> <li>Removal of all the UST system components (USTs, canopy, piping, fuel island, concrete pads etc)</li> <li>Pressure washing operations</li> <li>CSE Operations</li> </ul>	<b>When Benzene indicator tube result is 2.5 ppm or greater for any 15 minute period</b> <ul style="list-style-type: none"> <li>Benzene &gt; 5.0 ppm (but &lt; 250 ppm)</li> </ul>	Stop work. Evacuate area for 10 minutes and recheck worker Breathing Zone (BZ) and work area. If levels persist, consult HSPA/CIH for proper engineering controls or appropriate PPE requirements or before any investigation of “unknown” conditions or working in conditions where COC concentrations are potentially in excess of established Occupational Exposure Limits.  Level B PPE may be required if airborne concentrations of contaminants in the worker breathing zone continue to exceed the established action levels. <b>The use of Level B PPE must be evaluated by the HSPA/CIH, the project team and project stakeholder before implementation.</b>	1) Perform Benzene personal sampling when it is determined that Benzene is in excess of 2.5 ppm on the Sensidyne indicator tube # 118SE for any 15 minute period. 2) Continue personal sampling until HSPA/CIH determines that worker exposure to site COCs in excess of established OELs and a PPE downgrade is authorized	Daily before and after each sample collection event

<sup>a</sup> Action levels apply to sustained breathing-zone measurements above background.

<sup>b</sup> The exact frequency of monitoring depends on field conditions and is to be determined by the HSO; generally, every 5 to 15 minutes if acceptable; more frequently may be appropriate. Monitoring results should be recorded. Documentation should include instrument and calibration information, time, measurement results, personnel monitored, and place/location where measurement is taken (e.g., “Breathing Zone/MW-3”, “at surface/SB-2”, etc.).

<sup>c</sup> If the measured percent of O<sub>2</sub> is less than 10, an accurate LEL reading will not be obtained. Percent LEL and percent O<sub>2</sub> action levels apply only to ambient working atmospheres, and not to confined-space entry. More-stringent percent LEL and O<sub>2</sub> action levels are required for confined-space entry.

<sup>d</sup> Refer to SOP HSE 207 for instructions and documentation on radiation monitoring and screening.

<sup>e</sup> Noise monitoring and audiometric testing also required.

## 6.1 Calibration Specifications

Air Monitoring equipment calibration specifications are listed in Table 6-2.

TABLE 6-2  
Air Monitoring Equipment Calibration Specifications

Instrument	Gas	Span	Reading	Method
PID *	“zero air” gas and 100 ppm isobutylene	RF = 1.0	100 ppm	1.5 lpm reg T-tubing/ tedlar bag “zero air” gas followed by methane
<b>4 Gas Meter LEL/O<sub>2</sub>/H<sub>2</sub>S/CO Sensors *</b>	Methane	NA	2.5% (50% LEL)	1.5 lpm reg T-tubing/ tedlar bag
	Oxygen	NA	20.9%	1.5 lpm reg T-tubing/ tedlar bag
	Hydrogen Sulfide	NA	25	1.5 lpm reg T-tubing/ tedlar bag
	Carbon Monoxide	NA	50	
<b>Personal Sample Pump(s): **</b> Airchek 52 or equivalent	NA	Not applicable	sampling flow rate in L/min depending upon the selected NIOSH or OSHA method	Manual adjustment of pump using rotometer to required pump sampling flow rate in L/min,
Colorimetric Indicator Tubes	NA	NA	NA	NA

Note: Worker breathing zone and ambient air monitoring results and air monitoring equipment calibration measures must be logged on an Air Monitoring Log (**See Attachment 4**) or a daily field log/book.

## 6.2 Exposure Monitoring – Benzene

Because the scheduled work to be performed at under this contract at NAS Brunswick will be conducted in an open air, well ventilated out-door environment, it is not anticipated that site worker exposure to airborne concentrations of Benzene would exceed or would be reasonably be expected to exceed either the OSHA 8-hour time weighted average exposure of 1 ppm or the OSHA short-term exposure limit of 5 ppm for 15 minutes.

However, because the exact concentrations of Benzene in soil and groundwater at the subject site and within the proposed limits of remediation area not known at this time, AGVIQ-CH2MHILL is exercising a conservative approach to reducing the possibility of this situation occurring.

In accordance with Table 6-1, Air Monitoring Equipment Specifications, worker breathing zones will be monitored for the presence of total volatile compounds and specifically for the presence of Benzene in and around active site operations where the disturbance or removal of soil or groundwater impacted by TPH – GRO constituents occurs. Specifically, where

Photoionization Detector readings of a workers breathing zone are greater than 1 unit (i.e. ppm) but less than 5 ppm, "real-time" Benzene specific colorimetric indicator tubes will be employed to monitor a worker BZ for the presence of Benzene. If these Benzene specific air monitoring devices indicate that worker exposures are or could be reasonable be expected to encroach upon the OSHA 8-hour time weighted average exposure of 1 ppm or the exceed the OSHA short-term exposure limit of 5 ppm for 15 minutes, then worker personal exposure monitoring will be performed using OSHA 12 or 1005 or NIOSH 1500, 1501, 3700 or 3800 Methods. The assumption for this testing will be if worker breathing zone concentrations of Benzene concentrations via colorimetric indicator tube 2.5 ppm for any 15-minute period during the onsite work periods.

Assumptions:

- One, 5- to 12-person work crew may be employed to execute the anticipated site work for a period of approximately 8 hours per day during various intrusive phases of work.

Initial Monitoring Assessment:

One person from each identified labor category (i.e. laborer, operator supervisor, welder, etc.) will be fitted with a personal sampling device. The person designated from each work crew to wear the sampling device will selected based on the worker who has the most likely potential for being at greatest risk to Benzene exposure based on 1) assigned work task and 2) the worker's potential proximity to locations with highest elevated, on-site real-time air monitoring results.

Personal sampling pumps shall be battery powered and capable of being attached to the worker without impeding worker. Personal sampling pumps shall be set for the required sample pump flow rated established by the selected NIOSH or OSHA sampling method utilized for the monitoring procedure. The pump supplier shall initially calibrate the sample pump but shall be verified by field personnel and be routinely calibrated in the field to ensure accuracy. Information regarding pump flow calibration procedures shall be provided with the personal sample pump vendor for use by a designated field team member (i.e., SSHO). Personal sampling pumps shall be affixed with an applicable sample collection tube/cassette as dictated by the selected NIOSH or OSHA method for collecting ambient air samples, for a maximum sample collection period 8 hours. The personal sampling pump shall be turned on at the point where scheduled work activities could agitate potential Benzene or TPH-GRO impacted soil which would like become volatilized into the worker breathing zone.

Personal air samples shall be collected for a full shift period (8 continuous hours where possible) at a frequency of one sample for each shift, for each job classification in each work area for initial exposure assessment purposes. The full shift personal samples shall be representative of each employee's potential average exposure to airborne Benzene concentrations. Where the employer can document that one shift will consistently have higher employee exposures for an operation, the employer shall only be required to determine representative employee exposure for that operation during the shift on which the highest exposure is expected.

Retrieved personal air samples shall be collected at the end of the monitored work shift. Discriminating alpha-numeric sample nomenclature must be affixed to each sample

collection tube/cassette. The individual pump flow rate, sample volume, monitoring period (total flow period), and alpha-numeric sample identification information shall be transferred to the receiving laboratory sample Chain of Custody. The sample cartridge/cassette shall be properly packed and secured to ensure that sample loss and additional air intake does not occur and to eliminate the possibility of cartridge/cassette breakage during transport. The employer shall make a written record to include the following information: record shall identify date of determination, location of worksite, name and social security number of employee monitored, results and other applicable relevant sample collection considerations.

The samples and a laboratory sample Chain of Custody shall be placed in a sealed container and forward to an accredited laboratory that is capable and qualified to analyze the samples. Laboratory analysis reporting limits should have the lowest possible detection limit allowed by the analysis method, but should not be greater than 0.5 ppm. The lowest possible detection limits will be requested. If a laboratory detection limit of 0.5 ppm can not be achieved, the sample shall be re-collected. Air monitoring of this type shall be accurate, to a confidence level of 95 percent, to within plus or minus 25 percent for airborne concentrations of Benzene.

The employer's employer must, within 15 working days after the receipt of the results of any monitoring performed and notify each affected employee of these results either individually in writing or by posting the results in an appropriate location that is accessible to employees.

If the monitoring reveals employee exposure at or above the action level of 0.5 ppm but at or below the Time Weighted Average (TWA), the employer shall repeat such monitoring for each such employee at least every year. If the monitoring section reveals employee exposure above the TWA, the employer shall repeat such monitoring for each such employee at least every 6 months. The employer may alter the monitoring schedule from every six months to annually for any employee for whom two consecutive measurements taken at least 7 days apart indicate that the employee exposure has decreased to the TWA or below, but is at or above the action level.

If the initial monitoring as indicated by at least two (2) consecutive measurements taken at least 7 days apart reveals employee exposure to be below the action level the employer may discontinue the monitoring for that employee, except:

- When there has been a change in the production, process, control equipment, personnel or work practices which may result in new or additional exposures to benzene.
- When the employer has any reason to suspect a change which may result in new or additional exposures.
- Whenever spills, leaks, ruptures or other breakdowns occur that may lead to employee exposure.

When any exposures are over the PEL, the employer shall establish and implement a written program to reduce employee exposure to or below the PEL primarily by means of engineering and work practice controls.

## 6.2.1 Perimeter Air Monitoring

Because of the conservative approach of determining worker exposures of site contaminants at the point source of the worker's breathing zone engaged in intrusive site operations, work zone perimeter concentrations of site COCs should not exceed those identified at the worker breathing zone and in theory, be significantly reduced from those concentrations identified at the point source. With this process in mind, and with the required site safe guard actions that are required when elevated air monitoring results are encountered, perimeter air monitoring should not be necessary

However, in the event that 1) more aggressive soil or ground water disturbance operations were performed at the site, 2) onsite air monitoring data identified and gross exceedences of the established site air monitoring AL's 3) new data/information about the site is identified, then the perimeter air monitoring requirements could be applicable or 4) the general public could be effected by air bourn site COC concentrations, then this approach will be modified, with client approval.

## 6.3 Exposure Monitoring - Lead

The intent of the requirements defined by 29CFR1910.1025(d)(1)/29CFR1926.62(d) (1) would be applicable where it is determined that the OSHA Action Level of 30 ug/m<sup>3</sup>, for an eight (8) hour work period could be exceeded. Based on the exposure calculations prepared in section 3.85 Lead Compliance above, it is not reasonably anticipated that an exposure to Lead in excess of the OSHA AL or PEL would occur during the Sabino Hill Rake Tower soil removal activities. However, using a conservative approach and because there is available lead exposure monitoring data for a similar activity (lead soil excavation) during a preceding 12 month period, then the requirements to perform initial lead exposure monitoring under 29CFR1910.1025(d)(1)/29CFR1926.62(d) (1) could be applicable, and as such will be addressed in this HSP.

When performing an initial worker exposure assessment to airborne lead concentrations for lead impacted soil excavation operations at the Sabino Hill Rake Tower, it will be determined via the following methodology. Retrieved lead air monitoring samples will be analyzed using the OSHA/NIOSH methods identified in section 6.0 of this HSP.

### Assumptions:

- One, two- to three-person work crew may be employed to execute the anticipated site work for a period of approximately 8 hours per day.

### Initial Monitoring Assessment:

One person from each identified labor category (operator, ground support personnel) will be fitted with a personal sampling device. The person designated from each work crew "job classification category" to wear the sampling device will be selected based on the potential to be at the greatest risk to lead exposure based on 1) assigned work task and 2) workers potential proximity to locations elevated historical lead testing data.

Personal sampling pumps shall be battery powered and capable of being attached to the worker without impeding worker. Personnel sampling pumps shall be set for a flow rate of 2 liters/minute by the pump supplier and be calibrated by the pump supplier prior to

arriving at the project location and shall be rechecked by designated personnel (SSHO or site supervisor) prior to use. Information regarding pump flow calibration procedures shall be provided with the personal sample pump for use by a designated field team member (i.e. SSHO or site supervisor). Personal sampling pumps shall be affixed with an applicable sample collection cartridge capable of collecting ambient air samples for a period of at least seven continuous hours. The personal sampling pump shall be turned on at the point where scheduled work activities could agitate potential lead bearing particulate that would become airborne into the worker breathing zone.

Personal air samples shall be collected for a full shift period, at a frequency of one sample for each shift, for each job classification category, in each work area. For this project it is assumed that the job classification category will be limited to the heavy equipment operator performing the excavation activities and ground support personnel, such as a laborer or site supervisor. The full shift personal samples shall be representative of the monitored employee(s) regular, daily exposure to lead. The initial monitoring shall occur during two work shifts.

Retrieved samples shall be collected at the end of the monitored work shift. The individual pump flow rate, monitoring period (total flow period), and employee name shall be affixed to the sample cartridge. The sample cartridge shall be secured to ensure that sample loss and additional air intake does not occur. A sample number shall be identified on the sample cartridge if required by the receiving laboratory.

A laboratory chain of custody shall be completed with applicable information. The samples shall be placed in a sealed container and forward to an accredited laboratory that is capable and qualified to analyze the samples. It is anticipated that reporting results will have a minimum detection limit of 30 ug/m<sup>3</sup>. Much lower detection limits will be requested where available.

In the event that all results from the collected personal samples are below 30 ug/m<sup>3</sup>, then the work may be conducted without respiratory protection. Once this determination is made, the employer shall make a written record to include the following information: record shall identify date of determination, location of worksite, name and social security number of employee monitored, results and other applicable relevant considerations. Where result of the initial determination reveals employee exposure is below 30 ug/m<sup>3</sup>, additional measurements (determinations) need not be repeated except for the following conditions:

- A change in the production process occurs.
- Control or personnel change which may result in new or additional exposure to lead.
- Whenever an employer has any other reason to suspect a change which may result in new or additional exposures to lead.

### **6.3.1 Perimeter or Other Air Monitoring**

Even though the information provided in section 3.85 Lead Compliance of this HSP, does not indicate there would be exposure to lead in excess of the established OSHA AL or PEL, it is prudent to perform an initial round of lead monitoring at an upwind and downwind

locations of the lead soil excavation limits due to the proximity of potential off-site receptors (residence/forestry office). Sample collection methods, sample collection equipment and pump flow rates for lead air perimeter monitoring at the Sabino Hill Rake Tower site during soil excavation operations shall be collected and analyzed in a manner similar to that described in section 6.3 above, "Exposure Monitoring – Lead".

### **6.3.2 Worker Protective Clothing and Hygiene**

Workers engaged in the handling of lead or impacted soil or liquids or exposed to dust concentrations in excess of the established air monitoring action levels identified in section 6.0 of this HSP, the use of Personal Protective Equipment shall be in accordance with section 5.0 of this HSP.

Worker hygiene and decontamination requirements shall be in accordance with Section 7.0, "Decontamination" of this HSP. Workers shall be fully decontaminated prior to leaving designated restricted access zones. Only disposable worker protective clothing will be utilized, and as such the use of on-site showers is not anticipated. Workers will be instructed to shower at off-site lodging facilities, which are in close proximity to the project site, immediately after the end of the scheduled work shifts. Where Modified Level D or Level C PPE is ever required during the execution of the project, disposable protective coveralls shall have hoods and boot coverings to minimize potential dermal contact or contact with designated work clothes. Use of dedicated clothing washing or laundering facilities should not be needed so long as workers strictly adhere to required PPE and decontamination requirements. Hand washing facilities will be provided at the site and used prior to entering designated "support zone." See section 9.0, Site Control, for more detail. Any utilized respiratory protection equipment shall be fully cleaned, decontaminated and stored in accordance with the respiratory protection program that is applicable to the employee. Respiratory protection devices may also require intermediate decontamination prior to resuming work after scheduled breaks. The use of respiratory protection is not anticipated for lead impacted soil excavation operations at the Sabino Hill Rake Tower, but where it is determined to be necessary the use of respiratory protection devices shall be in accordance with section 3.8.7 Respiratory Protection, of this HSP.

Prior the end of a scheduled work shift, all generated potentially lead impacted PPE shall be containerized to minimize the potential for the spread of contamination and all hand tools used in the daily events will be decontaminated/containerized and stored to promote good housekeeping practices.

### **6.3.3 Administrative Controls**

The only anticipated administrative control that could be associated with this work would be any required work break regiments necessary to minimize the potential for heat stress related illnesses for workers wearing full Level D modified PPE (or Level C PPE if warranted) when ambient temperatures are in excess of 70°F.

Specifically, if workers are required to execute assigned tasks in Modified Level D PPE (or Level C PPE if warranted), a defined worker rotation schedule, shall be established by the AGVIQ-CH2MHILL program CIH. Workers working in full Modified Level D PPE, shall not work more than 45 mins without taking a break, or more frequently as necessary, based

on worker exposure monitoring results defined by the Heat Stress Monitoring requirements identified in this HSP. At this time use of Level C PPE for this project is not anticipated or planned for. Additionally, it is anticipated that lead impacted soil activities will be executed during the Spring (April 2010). Typically, ambient air temperatures in Maine during the spring would not exceed 70°F, instating heat stress monitoring and a work break regime would not likely be applicable for lead impacted soil excavation activities.

#### **6.3.4 Medical Surveillance**

Only those employees enrolled in a medical surveillance program meeting the criteria established by 29CFR1910.120(f)/29CFR1926.65(f) and 29CFR1910.134(e) and or 29CFR1910.1025/29CFR1926.62 shall actively engage in activities which disturb lead impacted soil. Lead blood monitoring is routinely performed on personnel enrolled in a medical surveillance required by these standards.

#### **6.3.5 Training**

Only personnel trained in accordance with the requirements 29CFR1910.120(e)(3) and (e)(8)/29CFR1926.65(e)(3) and (e)(8) and (e)(4), where applicable, shall execute operations that disturb soil or water impacted by identified site COCs. Supervisory, SSHOs and some designated labor force, personnel will have current First Aid and CPR training. Supervisory personnel shall also have received training in accordance with 29CFR1910.120(e)(4)/29CFR1926.65(e)(4).

Designated site personnel performing soil removal, handling or dewatering operations shall have received lead awareness training prior to performing this work. Lead awareness training should meet the intent of the 29CFR1910.1025(l)/29CFR1910.62(l) requirements.

Where personnel are required to wear a respirator, they must review their employer's the Respiratory Protection Program requirements, at least on an annual basis.

It is anticipated that personnel supervising this work will have previous experience in executing hazardous waste operations and are competent and capable of successfully completing this assigned work. This determination shall be made in conjunction with the Project Manager and HSPA or CIH.

#### **6.3.6 Lead Hazard Control Areas**

The use of specifically established "lead hazard control areas" or "lead regulated areas" do not lend applicability to this assigned work. However, Site Control measures applicable to HAZWOPER operations are applicable to minimize the potential excess to the active work zone by unauthorized personnel. Site Control requirements applicable to HAZWOPER regulation (29CFR1910.120) shall be in accordance with the requirements of section 9.0, "Site Control" of this HSP.

#### **6.3.7 Security**

Because the soil excavation operations will be performed after the demolition of the Rake Tower is completed, the chain link security fence currently surrounding the site will likely be removed prior to the start of the excavation of lead impacted soil. After the removal of the existing site security fencing is complete to facilitate proposed demolition operations,

then access to the site work area by unauthorized personnel will only be limited by the secluded nature of its location.

During soil excavation activities, only the use of typical temporary 4-foot high visibility construction fencing will be used to secure the perimeter of the excavation limits, as required for Class III excavation perimeter protection will be used to secure the Sabino Hill soil excavation limits. When the excavation perimeter protection is established, it shall be done so to meet the Site Control conditions of section 9.0 of this HSP.

### **6.3.8 Waste Generation**

Spent PPE generated during the execution of the Sabino Hill Rake Tower work will be properly containerized, labeled and stored at a central secured location at the site, pending analysis. Where analysis PPE including sampling gloves and expendable sampling equipment will be bagged and properly disposed of.

# 7.0 Decontamination

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For the execution of this CTO, it is not anticipated that Level C PPE is anticipated, but level D modified PPE will be required to ensure a negative worker exposure to identified site COCs. Regardless of what type of worker PPE requirements are necessary, proper site worker hygiene and decontamination (when required) procedures are important to eliminate any inadvertent exposure to unhealthy conditions that could occur but have yet been identified and it is important for site personnel to exercise to the following procedures:

- 1) Eating, drinking, smoking and other tobacco use shall only be conducted in designated and unrestricted areas and not in any areas where there is any exposure to hazardous material/waste, flammable/combustible liquids, and gases.
- 2) Wash hands and face, if applicable, before eating, drinking, smoking or otherwise using tobacco.
- 3) Shower as soon as feasible after completing field activities.

The SSHO must establish and monitor the decontamination procedures and their effectiveness. Decontamination procedures found to be ineffective will be modified by the SSHO. The SSHO must ensure that procedures are established for disposing of materials generated on the site.

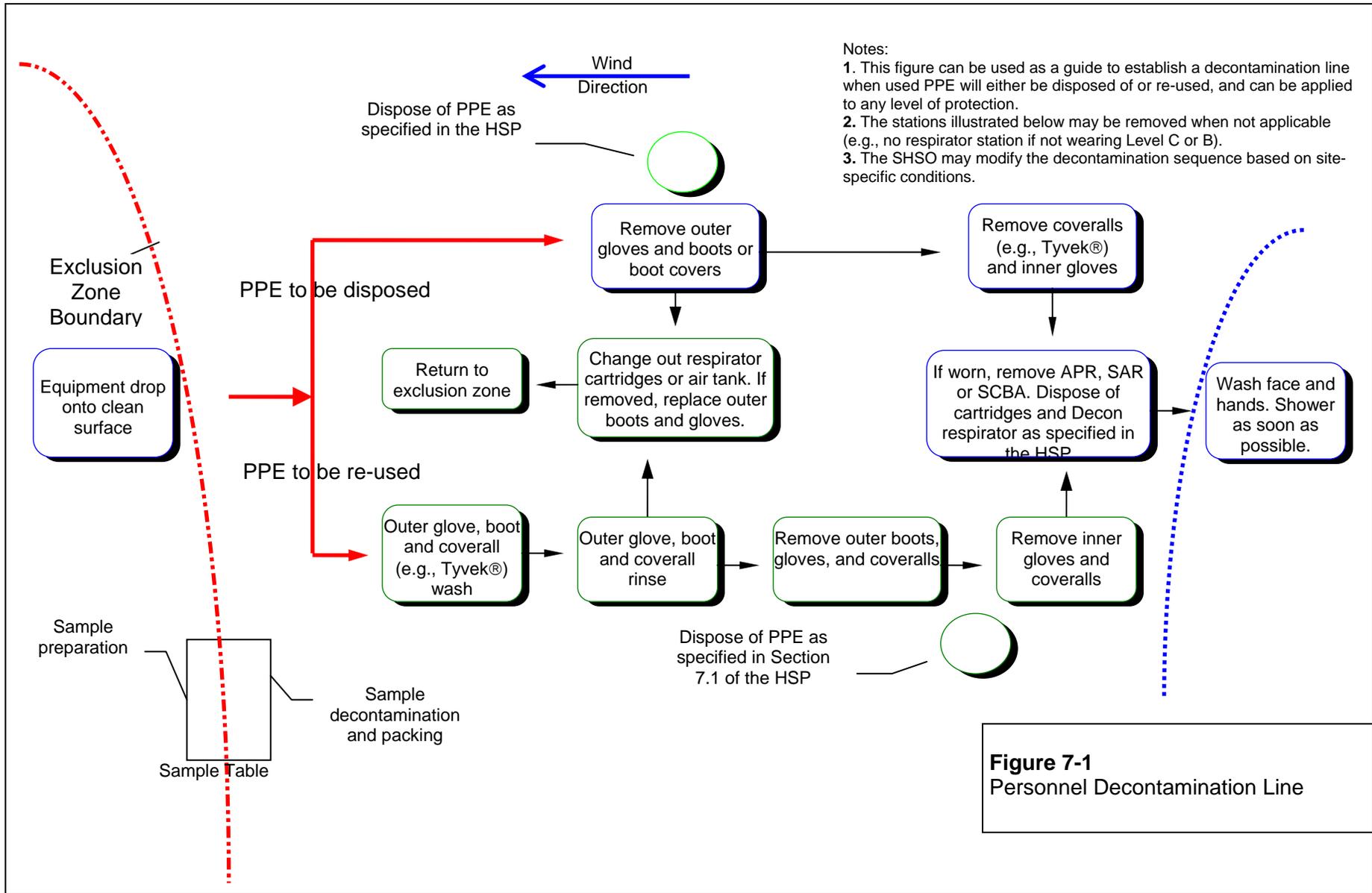
## 7.1 Decontamination Specifications

Where Level D modified (or Level C PPE) is utilized for worker protection, it is essential for workers to maintain the good personal hygiene practices. Proper and specific decontamination procedures will be required where Level D modified (or Level C PPE) is required for this project, to ensure negative worker exposure to any identified contaminants or hazardous materials. These procedures are identified and illustrated below. Contact lenses are not permitted in HAZWOPER exclusion or decontamination zones.

Personnel	Sample Equipment	Heavy Equipment
<ul style="list-style-type: none"> <li>▪ Boot wash/rinse</li> <li>▪ Glove wash/rinse</li> <li>▪ Outer-glove removal</li> <li>▪ Body-suit removal</li> <li>▪ Inner-glove removal</li> <li>▪ Respirator removal</li> <li>▪ Hand wash/rinse</li> <li>▪ Face wash/rinse</li> <li>▪ Shower ASAP</li> <li>▪ Collect, properly containerize, label and dispose of all spent of PPE</li> <li>▪ Collect, properly containerize, label and dispose of all spent decontamination fluid contain for offsite disposal</li> </ul>	<ul style="list-style-type: none"> <li>▪ Wash/rinse equipment</li> <li>▪ Solvent-rinse equipment</li> <li>▪ Contain solvent waste for offsite disposal</li> <li>▪ Collect, properly containerize, label and dispose of all spent of decontamination fluid and residual solids for offsite disposal</li> </ul>	<ul style="list-style-type: none"> <li>▪ Power wash</li> <li>▪ Steam clean</li> <li>▪ Collect, properly containerize, label and dispose of all spent of decontamination fluid or residual solids</li> </ul>

## 7.2 Diagram of Personnel-Decontamination Procedures

Figure 7-1 is a flow chart of the Personnel Decontamination Line. No eating, drinking, or smoking is permitted in contaminated areas and in exclusion or decontamination zones. The SSHO should establish areas for eating, drinking, and smoking. Contact lenses are not permitted in exclusion or decontamination zones. In all cases, when Level D modified (or Level C) is utilized, it is essential for workers to maintain good positive personal hygiene practices.



**Figure 7-1**  
Personnel Decontamination Line

## 8.0 Spill-Containment Procedures

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Sorbent material will be maintained in the support zone. Incidental spills will be contained with sorbent and disposed of properly.

### 8.1 Procedure for Containing/Collecting Spills

The initial response to any spill or discharge will be to protect human health and safety, and then the environment. Identification, containment, treatment, and disposal assessment will be the secondary response.

If for some reason a chemical spill is not contained within a dike or sump area, an area of isolation will be established around the spill. The size of the area will generally depend on the size of the spill and the materials involved. If the spill is large (greater than 55 gallons) and involves a tank or a pipeline rupture, an initial isolation of at least 100 feet in all directions will be used. Small spills (less than or equal to 55 gallons) or leaks from a tank or pipe will require evacuation of at least 50 ft in all directions to allow cleanup and repair and to prevent exposure. When any spill occurs, only those persons involved in overseeing or performing emergency operations will be allowed within the designated hazard area. If possible, the area will be roped off or otherwise blocked.

If the spill results in the formation of a toxic vapor cloud (by reaction with surrounding materials or by outbreak of fire) and its release (due to high vapor pressures under ambient conditions), further evacuation must be engaged. In general, an area at least 500 feet wide and 1,000 feet long will be evacuated downwind if volatile materials are spilled. (Consult the Department of Transportation (DOT) Emergency Response Guide for isolation distances for listed hazardous materials.)

If an incident may threaten the health or safety of the surrounding community, the public will be informed (via proper local and state emergency management planning agencies) and possibly evacuated from the area. The onsite emergency coordinator will inform the proper agencies in the event this is necessary. A Project Emergency Contact List is provided in **Attachment 11**.

As called for in regulations developed under the comprehensive Environmental Response Compensation Liability Act of 1980 (Superfund), AGVIQ-CH2M HILL's practice is to report a spill of a pound or more of any hazardous material for which a reportable quantity has not been established and which is listed under the Solid Waste Disposal Act, Clean Air Act, Clean Water Act, or the Toxic Substances Control Act (TSCA). TSCA also follows the same practice for any substances not listed in the Acts noted above but which can be classified as a hazardous waste under Resource Conservation and Recovery Act (RCRA).

Response/containment personnel shall take the following measures:

- Immediately warn any nearby workers and notify individual responsible for site operations.

- Assess the spill area to ensure that it is safe to respond.
- Evacuate area if spill presents an emergency.
- Ensure all unnecessary persons are removed from the hazard area.
- Put on protective clothing and equipment.
- If a flammable material is involved, remove all ignition sources, and use only spark- and explosion-proof equipment for recovery of material.
- Remove all surrounding materials that could be especially reactive with materials in the waste. Determine the major components in the waste at the time of the spill.
- Stop source of spill.
- Establish site control for spill area.
- If wastes reach a storm sewer, dam the outfall by using sand, earth, sandbags, etc. Pump this material out into a temporary holding tank or drums as soon as possible.
- Place all small quantities of recovered liquid wastes (55 gallons or less) and contaminated soil into drums for incineration or removal to an approved disposal site.
- Spray the spill area with foam, if available, if volatile emissions may occur.
- Apply appropriate spill control media (e.g., clay, sand, lime) to absorb discharged liquids.
- For large spills, establish diking around leading edge of spill using booms, sand, clay, or other appropriate material. If possible, use diaphragm pump to transfer discharged liquid to drums or holding tank. Follow proper ground and bonding procedures of equipment during recovery efforts. Intrinsically safe equipment must be used in recovery operations.

## 8.2 Anticipated Hazardous Materials

The following is a list of hazardous materials or chemicals that may be brought onsite and incorporated as part of the final completion of the work, generated during the execution of the work for offsite disposal or recycling or otherwise used to facilitate site work. These hazardous materials or chemicals may require spill prevention and countermeasure control processes to ensure sensitive environmental receptors are not adversely impacted in the event of a spill or release of these materials.

- Gasoline residual product in lines/tanks
- Petroleum impacted soil
- Gasoline (small metal safety containers for fueling small engine equipment)
- Diesel fuel in heavy equipment
- Minor quantities of sample preservatives (e.g., nitric acid, hydrochloric acid, sulfuric acid, sodium hydroxide/zinc acetate, phosphoric acid)

## 8.3 Notification

In the event a spill occurs that requires notification, a project person shall follow the AGVIQ-CH2M HILL Incident Notification Process and Chain of Command” structure identified in Figure 10-2, of this HSP.

In addition, the AGVIQ-CH2M HILL overall Project Manager shall make notification to the designated NAVFAC Remedial Project Manager (RPM) or Resident Officer In Charge of Construction (ROICC) or other designated client POC, as applicable, such that additional appropriate community and/or federal/state agencies may be engaged and notified, as applicable. The AGVIQ-CH2M HILL Project Manager (overall) shall coordinate with the designated Project Environmental Compliance Manager for support with regard to adhering to local, state, or federal regulations for spill notification clean-up and closure requirements.

# 9.0 Site-Control Plan

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## 9.1 Site-Control Procedures

Project managers and team leaders are to perform the following tasks:

- Evaluate and ensure worker safety in remote/secluded work areas.
- Confirm if potentially dangerous activities (such as hunting seasons, live ordinance use, military field exercises/activities, transfer of dangerous or explosive cargo/materials, location of explosive arc zones) could be occurring in or adjacent to any AGVIQ-CH2M HILL work areas that may jeopardize worker health and safety.
- Reschedule field activities when potentially dangerous activities are occurring adjacent to AGVIQ-CH2M HILL work locations. Ensure proper two-way communications with workers in remote work areas. Use the buddy system.
- Site workers and visitors shall sign-in and sign-out as they enter and exit the site work boundaries (see **Attachment 4**).
- **Designate an emergency evacuation route.**
- **Designate an evacuation assembly area.**
- The SSHO, or designee, will conduct a site safety briefing (section 4.0 of this HSP) before starting field activities or as tasks and site conditions change.
- Topics for briefing on site safety: general discussion of Health and Safety Plan, site-specific hazards, locations of work zones, PPE requirements, equipment, special procedures, emergencies.
- The SSHO records safety briefing attendance in a logbook and documents the topics discussed.
- Ensure that applicable AGVIQ-CH2M HILL personnel have received the BBLPS Training.
- Be aware of any potential for hazardous chemical exposure and know what precautions/training are required.
- Establish support, decontamination, and exclusion zones. Delineate with flags or cones as appropriate. Support zone should be upwind of the site. Use access control at entry and exit from each work zone.
- Know how an emergency should be reported.
- Identify exact facility location and position (where possible) when contacting EMS/Fire Dispatch.
- Have readily available copy of the Hospital Route Map.

- Establish onsite communication consisting of the following:
  - Line-of-sight and hand signals
  - Air horn
  - Two-way radio or cellular telephone if available
- Establish offsite communication.
- Establish and maintain the “buddy system.”
- Know how, what, when injuries/accidents are reported and treated.
- Initial air monitoring is conducted by the SSHO in appropriate level of protection.
- The SSHO or other authorized designee is to conduct periodic inspections of work practices to determine the effectiveness of this plan. Such inspections should identify site conditions or actions that are not consistent with the policies and procedures of the H&S program, report to the AGVIQ-CH2M HILL Project Manager (overall) and the AGVIQ-CH2M HILL HSPA/CIH. The project team shall develop and implement corrective action procedures in a timely manner.

## 9.2 Specific Site Control Measures

To prevent both exposure of unprotected personnel and migration of contamination, work areas and personal protective equipment requirements will be clearly identified when operations that fall under the requirements of 29 CFR 1910.120/29 CFR 19126.65 are executed. This HSP recommends that the area surrounding each of the work areas be divided into three distinct zones; the exclusion zone (EZ), the contamination reduction zone (CRZ), and the support zone (SZ).

Only individuals who meet the requirements of 29 CFR 1910.120/29 CFR 1926.65 and who are authorized by the AGVIQ-CH2M HILL individual responsible for site operations (i.e., site supervisor) or the SSHO shall be allowed entry into the EZ and CRZ. Suitable means and methods (high visibility fencing, caution tape signage, other physical barriers) shall be employed to demarcate the EZ and CRZ boundaries at this site to prevent unauthorized entry into these controlled work zones. A CRZ for decontamination shall be established adjacent to the EZ. The SZ shall be kept free from contamination.

A typical EZ/CRZ/SZ representation is illustrated in Section 7.0 Decontamination, Figure 7-1.

### 9.2.1 Exclusion Zone

An EZ will be constructed to surround each work area where the greatest potential for worker exposure to identified site COCs may exist. The EZ may need to be transient as the work progresses, depending upon the type of work that is being executed. Because of potential site space limitations, the exclusion zone fencing may also include any available permanent perimeter fencing or other established physical barriers. Note that the term "permanent" is often used to describe the outer limits (or perimeter) of a work site or designated site area. Other temporary barriers (e.g., caution tape, high visibility construction fencing) maybe used to supplement existing permanent barriers to demarcate the EZ to

identify the restricted access. Access to the EZ will be restricted to personnel wearing the prescribed level of protective equipment and meeting the training and medical criteria of this plan.

All personnel entering established EZs/CRZs shall log-in and log-out on a daily basis (see **Attachment 4**).

### 9.2.2 Contamination Reduction Zone

Each CRZ zone will be a clearly marked corridor between the EZ and the SZ. The CRZ for each area will be located immediately adjacent to the EZ. This area will be identified with yellow tape, high visibility construction fencing, or other suitable barriers.

The CRZ is where personnel will begin the sequential decontamination process when exiting the EZ. To prevent cross contamination and for accountability purposes, all personnel must enter and leave the EZ through the CRZ.

Contaminated personnel and equipment will exit the EZ directly to the CRZ. Each CRZ will contain constructed decontamination stations for personnel and equipment. If possible, the CRZ will be located upwind of each EZ; however, due to site constraints, this may not be possible. Temporary support zones for each work area will be located adjacent to the CRZs.

### 9.2.3 Support Zone

Temporary support zones and staging areas will be established at the entrance of each control area. Potable water, an eye wash, and first aid supplies will be located at each temporary support zone. No hazardous or potentially hazardous materials will be allowed in the support zone unless it is in a properly labeled container that has no external contamination. Eating, drinking and, smoking will only be allowed in this area, at designated locations.

Portable bathroom facilities will be located near the work areas. In addition, potable water and water and soap for hand washing will be available at the support zone, along with containers for solid waste for use by site personnel, in addition to first aid stations and administrative information.

## 9.3 HAZWOPER Compliance Plan

Certain parts of the site work are covered by state or federal HAZWOPER standards and therefore require training and medical monitoring. Anticipated HAZWOPER tasks (Section 1.4 or otherwise determined) might occur consecutively or concurrently with respect to Non-HAZWOPER tasks. This section outlines procedures to be followed when approved activities specified in Section 1.6 do not require 24- or 40-hour training. Non-HAZWOPER-trained personnel also must be trained in accordance with all other state and federal OSHA requirements.

- In many cases, air sampling, in addition to real-time monitoring, must confirm that there is no exposure to gases or vapors before non-HAZWOPER-trained personnel are allowed on the site, or while non-HAZWOPER-trained staff are working in proximity to

HAZWOPER activities. Other data (e.g., soil) also must document that there is no potential for exposure. The HSPA/CIH must approve the interpretation of these data.

- When non-HAZWOPER-trained personnel are at risk of exposure, the SSHO must post the exclusion zone and inform non-HAZWOPER-trained personnel of the following:
  - Nature of the existing contamination and its locations
  - Limitations of their access
  - Emergency action plan for the site
- Periodic air monitoring with direct-reading instruments conducted during regulated tasks also should be used to ensure that non-HAZWOPER-trained personnel (e.g., in an adjacent area) are not exposed to airborne contaminated media.
- When exposure is possible, non-HAZWOPER-trained personnel must be removed from the site until it can be demonstrated that there is no longer a potential for exposure to health and safety hazards.

# 10.0 Emergency Response Plan

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## 10.1 Pre-Emergency Planning

(Reference SOP # HSE&Q 106, Emergency Planning)

The SSHO performs the applicable pre-emergency planning tasks before starting field activities and coordinates emergency response with AGVIQ-CH2M HILL onsite parties, the facility, and local emergency-service providers as appropriate.

- **AGVIQ-CH2M HILL personnel shall review and implement all applicable components of CH2M HILL SOP # HSE&Q 106 Emergency Planning.**
- Review the facility emergency and contingency plans where applicable.
- Determine what onsite communication equipment is available (e.g., two-way radio, air horn).
- Determine what offsite communication equipment is needed (e.g., nearest telephone, cell phone).
- Confirm and post emergency telephone numbers, evacuation routes, assembly areas, and route to hospital; communicate the information to onsite personnel.
- Review changed site conditions, onsite operations, and personnel availability in relation to emergency response procedures.
- Where appropriate and acceptable to the client, inform emergency room and ambulance and emergency response teams of anticipated types of site emergencies.
- Designate one vehicle as the emergency vehicle; place hospital directions and map inside; keep keys in ignition during field activities.
- Inventory and check site emergency equipment, supplies, and potable water.
- Communicate emergency procedures for personnel injury, exposures, fires, explosions, and releases.
- Rehearse the emergency response plan before site activities begin, including driving route to hospital.
- Brief new workers on the emergency response plan.
- The SSHO will evaluate emergency response actions and readiness status and initiate appropriate follow-up actions. The SSHO in conjunction with the project team management will develop and implement solutions, matching all identified emergency preparedness criteria and implement corrective actions as necessary. Communicate deficiencies in emergency response preparedness as a “lesson learned” to all project personnel.

- File follow-up on implemented corrective action to confirm solution is appropriate.

## 10.2 Emergency Equipment and Supplies

The SSHO should mark the locations of emergency equipment on the site map and post the map. Equipment and locations are listed below.

Emergency Equipment and Supplies	Location
20 LB (or two 10-lb) fire extinguisher (A, B, and C classes)	Support Zone/Heavy Equipment
First aid kit	Support Zone/Field Vehicle
Eye wash	Support and Decon Zone/Field Vehicle
Potable water	Support and Decon Zone/Field Vehicle
Bloodborne-pathogen kit	Support Zone/Field Vehicle
Additional equipment (specify): Mobile phone and contact information	Support Zone/Field Vehicle
Spill Control/Clean-up Materials/Proper Spill Response PPE	Support Zone& Decon. Zone and/or active work area(s)

## 10.3 Incident Reporting, Investigation, and Response

For any accident meeting the definition of **Recordable Occupational Injuries or Illnesses or Significant Accidents**, the NAVFAC Contracting Officer and Navy Technical Representative (NTR) will be notified by the AGVIQ-CH2M HILL Project Manager (overall) soon as practical, **but not later than 4 hours after occurrence**. In the event that the overall AGVIQ-CH2M HILL Project Manager is not available, the designated AGVIQ-CH2M HILL individual responsible for site operations may make notification, but **only** after consultation with the AGVIQ-CH2M HILL Program or Deputy Program Managers. All other incidents must be reported to NAVFAC within 24 hours of incident occurrence. Only authorized AGVIQ-CH2M HILL personnel (Program Manager and/or Deputy Program Manager, overall AGVIQ-CH2M HILL Project Manager) may make notification to NAVFAC Northwest Division regarding project accidents, injuries, or illnesses.

In order for the incident to be assessed for the purposes of meeting reporting requirements, it is imperative that **all personal injuries, near misses, or property damage incidents involving AGVIQ-CH2M HILL or subcontractor project personnel be reported IMMEDIATELY to the chain of command personnel identified in Section 10.7 and Attachment 11 of this HSP**. The following information shall be provided:

- Date and time of incident
- Project name and project number
- Name and worker classification
- Extent of known injuries
- Level of medical attention
- Injury cause
- Witnesses

A written incident investigation will be performed and submitted to the HSPA/CIH within 24 hours of incident occurrence by the completing the Incident Report, Near-Loss Investigation and Root Cause Analysis provided in the HSP Attachments.

In fires, explosions, or chemical releases, actions to be taken include the following:

- Shut down AGVIQ-CH2M HILL operations and evacuate the immediate work area
- Notify appropriate response personnel
- Account for personnel at the designated assembly area(s)
- Assess the need for site evacuation, and evacuate the site as warranted

Instead of implementing a work-area evacuation, small fires or spills posing minimal safety or health hazards may be controlled by onsite personnel, assuming that personnel who respond to these emergencies are properly trained to do so and wearing appropriate PPE to protect themselves against hazards that may be associated with the response.

## 10.4 Emergency Medical Treatment

The procedures listed below may also be applied to non-emergency incidents. AGVIQ-CH2M HILL employee injuries and illnesses must also be reported to the Human Resources contact in **Attachment 11**, once the notification requirements identified in Figure 10-7 have been fulfilled. If there is doubt about whether medical treatment is necessary, or if the injured person is reluctant to accept medical treatment, contact the designated medical consultant, as applicable. During non-emergencies, follow these procedures as appropriate.

- Notify appropriate emergency response authorities (e.g., 911).
- The SSHO will assume charge during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room.
- Prevent further injury.
- For life threatening emergencies, get or summon medical attention immediately.
- Perform decontamination on a down a person requiring medical attention in the following manner. Perform personnel decontamination as quickly and through as the condition will allow and initiate lifesaving, first aid or medical treatment as a priority.
- In the event a worker in an Exclusion Zone (EZ) needs medical assistance primary consideration must be given to remove all site contaminants before transfer of the employee to an uncontaminated area or atmosphere or before being handled by untrained/protected medical response personnel. Decontamination of personnel exposed to TPH-GRO contaminants should be done as quickly as possible via the following procedures:
  1. After removal from the contaminated area, the exposed individual(s) will be decontaminated by washing the contaminated areas with appropriate decontamination solutions and flushing with potable water. In particular, direct skin (dermal) contact must be addressed via decontamination with soapy water. Decontamination operations must be performed as quick as possible, as time is off the essence in emergency medical situations. Field team personnel shall utilize

disposable PPE wherever possible to promote rapid decontamination of personnel in the EZ.

2. If a respirator is used in the EZ, the respirator mask is left on the exposed individual until decontamination has been completed unless it has been determined that areas of the face were contaminated and the mask must be removed to decontaminate.
  3. After decontamination, the contaminated clothing is removed and skin contamination washed away. If possible, decontamination is completed before the exposure individual is taken to a medical facility.
  4. ONLY potable water will be used when flushing the eyes or mouth.
  5. All receptacles used for containing protective clothing shall be equipped with lids that can be closed to prevent the release of contaminants and the introduction of rainfall.
  6. Initiate first aid and CPR, upon completion of decontamination operations.
  7. Make certain that the injured person is accompanied to the emergency room.
- When contacting the medical consultant, give your name and telephone number, the name of the injured person, the extent of the injury or exposure, and the name and location of the medical facility where the injured person was taken.
  - Report incident as outlined in Section 10.3.
  - **A map showing the route to the local hospital is shown on Figure 10-1.**
  - For CH2M HILL personnel who experience a minor non-life threatening emergency that requires medical attention, please refer to **Attachment 11** for the “Emergency Nurse Instructions” and “Initial Medical Treatment Form”.

FIGURE 10-1  
HOSPITAL ROUTE MAP, NAS Brunswick

## Hospital

**Hospital Name/Address:**

**Mid Coast Hospital Brunswick**  
123 Medical Center Drive, Brunswick ME 04011

**Hospital Phone #:**

(207) 729-0181  
911 for emergency

## Directions to Hospital

- START

1:

Start out going NORTHEAST on FITCH AVE toward BATH RD/ME-24.

1.0 mi
- 2:

Turn RIGHT onto ME-24/BATH RD. Continue to follow BATH RD.

1.1 mi
- 3:

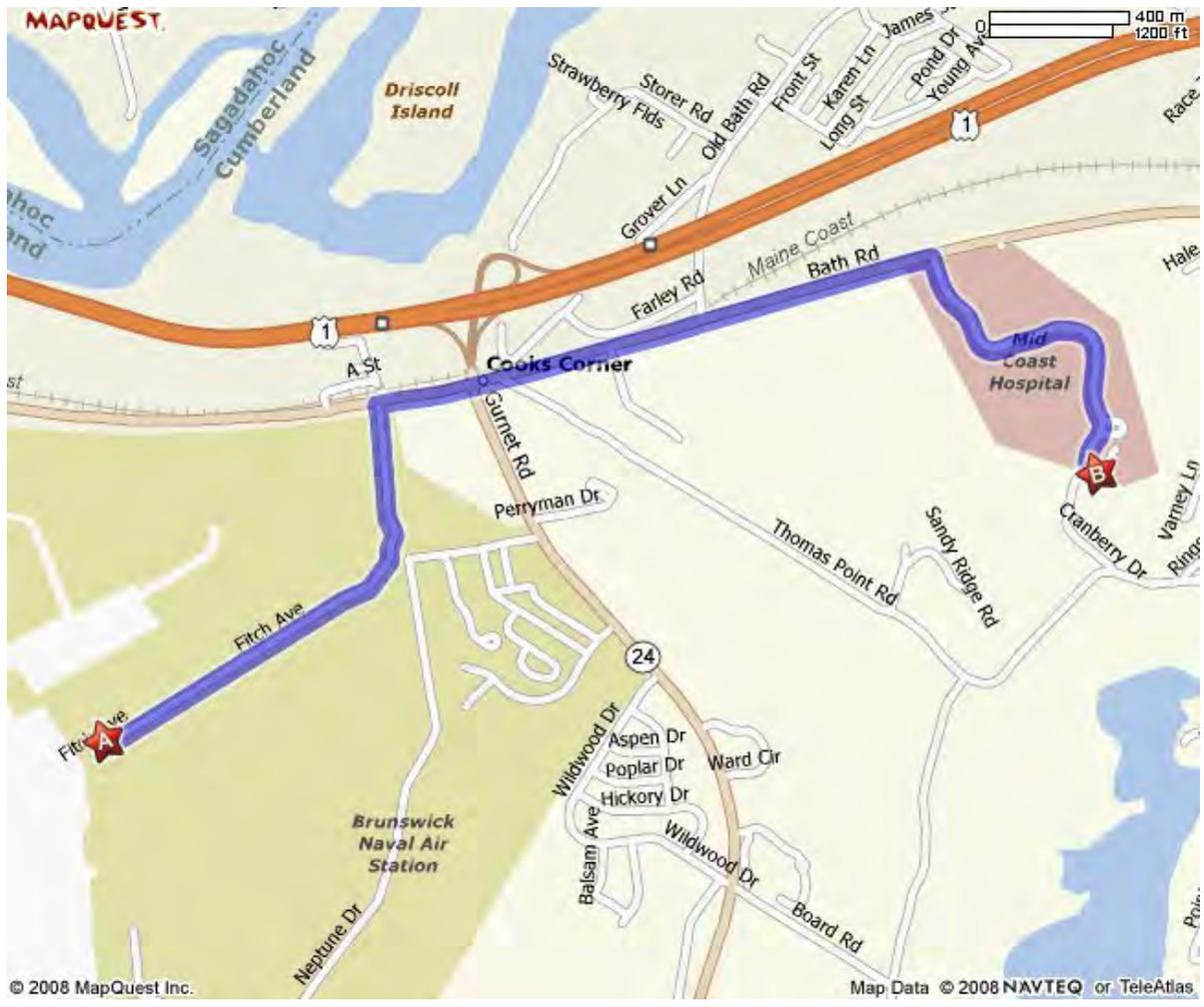
Turn RIGHT onto MEDICAL CENTER DR.

0.8 mi
- END

4:

End at 123 Medical Center Dr Brunswick, ME 04011-2652

Estimated Time: 7 minutes Estimated Distance: 2.93 miles



## 10.5 Evacuation

- Evacuation routes and assembly areas will be specified at the commencement of field work.
- Evacuation route(s) and assembly area(s) will be designated by the SSHO before work begins.
- Personnel will assemble at the assembly area(s) upon hearing the emergency signal for evacuation.
- The SSHO and a “buddy” will remain on the site after the site has been evacuated (if safe) to assist local responders and advise them of the nature and location of the incident.
- The SSHO will account for all personnel in the onsite assembly area.
- A designated person will account for personnel at alternate assembly area(s), as may be established to meet project site conditions.

## 10.6 Evacuation Signals

Evacuation signals are listed below.

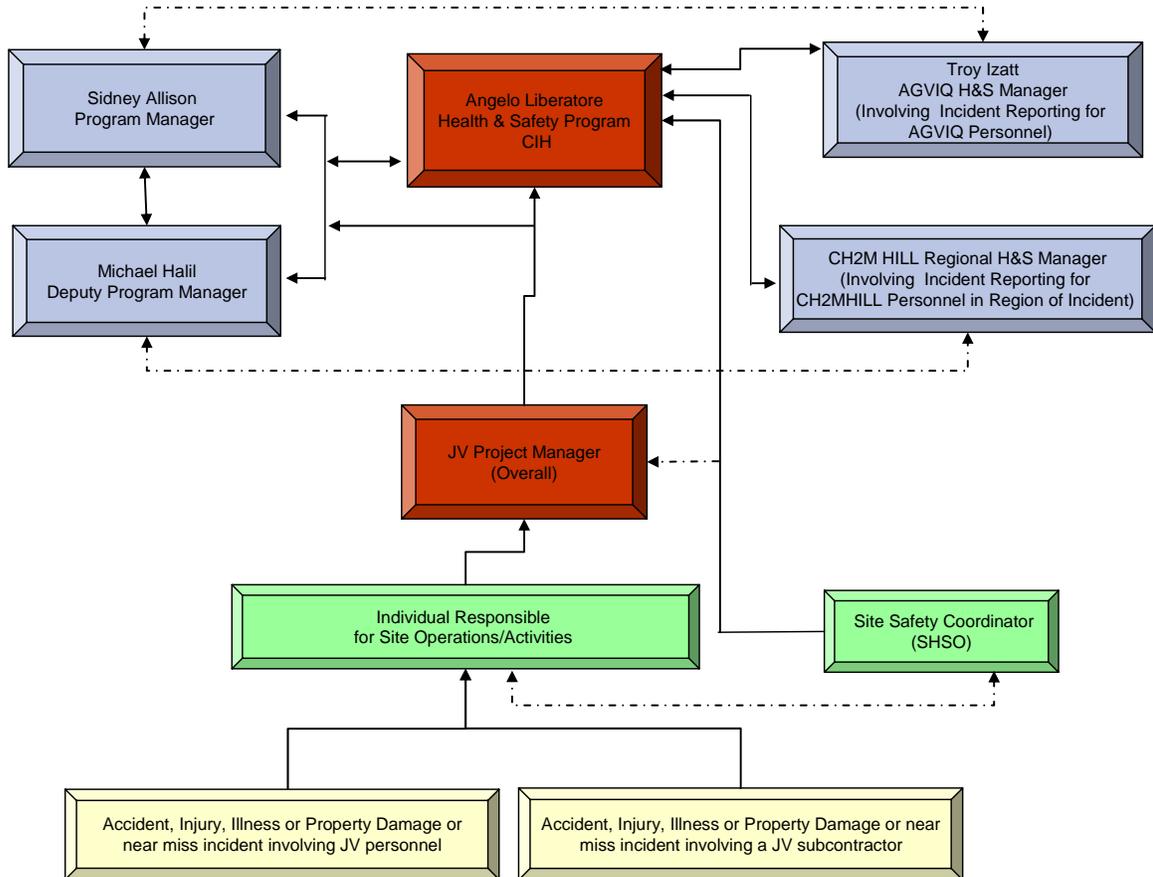
Signal	Meaning
Grasping throat with hand	Emergency-help me.
Thumbs up	OK; understood.
Grasping buddy’s wrist	Leave area now.
Continuous sounding of horn	Emergency; leave site now.

## 10.7 Incident Notification and Reporting

- Upon any project incident (fire, spill, accident, injury/illness, near miss, property damage, death, etc.), immediately notify the Project Manager (overall) and HSPA/CIH. Figure 10-2 identifies the AGVIQ-CH2M HILL Incident Reporting Process.
- For AGVIQ-CH2M HILL work-related injuries or illnesses, contact the respective resources on the emergency contact list in **Attachment 11** of this HSP. For AGVIQ-CH2M HILL incidents, the SSHO or individual responsible for site operations completes an Incident Report Form (IRF). In some cases, this can be completed by the employee. The IRF must be completed within 24 hours of incident.
- For AGVIQ-CH2M HILL subcontractor incidents, complete the Subcontractor Accident/Illness Report Form and submit to the HSPA/CIH.

FIGURE 10-2

### AGVIQ-CH2MHILL JV III (SB RAC) Incident Notification Process and Chain of Command



# 11.0 Approval

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This site-specific Health and Safety Plan has been written for use by AGVIQ-CH2M HILL only. AGVIQ-CH2M HILL claims no responsibility for its use by others unless that use has been specified and defined in project or contract documents. The plan is written for the specific site conditions, purposes, dates, and personnel specified and must be amended if those conditions change.

## 11.1 Original Plan

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**Prepared By: Mark Orman, CSP**

**Date: July 13, 2009**

*CH2M HILL Constructors, Inc., Health & Safety Manager  
678-530-4210 / 770-331-3127 (Cell)*



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**Approved By: Angelo Liberatore, CIH**

**Date: July, 2009**

*Joint Venture H&S Program Manager CIH  
(678) 530 4210/ (770) 335-2076 (cell)*



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**Approved By: Venky Venkatesh, Project Manager**

**Date: July, 2009**

*Venky Venkatesh, Project Manger  
215-640-9391 / 216-235-8613 (cell)*

## 11.2 Revisions

**Revisions Made By: Glen Jackson, CHST, ASP**

**Date: September 9, 2009**

*Health & Safety Officer  
AGVIQ, LLC.*



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- 1) Section 1.0, Introduction: Paragraph 6 was added to reflect the following: "A hardcopy of this HSP and APP, inclusive of the project Remedial Action Work Plan and its other components shall be available on-site for reference by site personnel."

- 2) Section 1.4, Hazwoper Regulated Tasks: Work phase tasks associated with mobilization, utility and land survey, erosion and sediment control installations and site restoration under “Non-Hazwoper Regulated Tasks” also added to this section but clarified with the following text: “...where site soil or water impacted by TPH-GRO constituents are disturbed or there is a potential site worker exposure to TPH-GRO constituents or other identified site COCs.”
- 3) Section 1.4, Hazwoper Regulated Tasks: Section was revised with the following: “Personnel performing the above work phase tasks or in conditions where there is potential exposure to TPH-GRO or other site COCS, shall meet the training and medical surveillance requirements established by section 2.0, Employee Medical Surveillance and Training, of this HSP.”
- 4) Section 1.5 Non Hazwoper Regulated Tasks: The task identified as “Above ground demolition of Fuel Island” was deleted from this section and added to section 1.4, as a Hazwoper Regulated Task.
- 5) Section 1.5 Non Hazwoper Regulated Tasks: Work phase tasks associated with mobilization, utility and land survey, erosion and sediment control installations and site restoration under “Non-Hazwoper Regulated Tasks” where clarified with the following text: “...where site soil or water impacted by TPH-GRO constituents are not disturbed or there is no potential site worker exposure to TPH-GRO constituents or other identified site COCs.”
- 6) Section 2.1 Medical Surveillance and Training: Section was revised to identify the specific medical surveillance and training requirements required by 29CFR1910.120/29CFR1926.65 or 29CFR1910.134 for Hazwoper regulated activities at the site.
- 7) Section 2.2 Project Responsibilities: Paragraph 2 of this section has been clarified to define that AGVIQ-CH2MHILL SSHO representative will assume the role to establish emergency communications with all potential emergency response organizations.
- 8) Section 2.2.1.4 SSHO; training requirements for the SSHO have been removed from this section as it is fully identified in section 2.1 Medical Surveillance and Training.
- 9) Section 2.2.1 Key Safety personnel. Will Knox has been identified as the Project SSHO and Nathaniel Price and Rob Lychalk have been identified as alternate SSHOs.
- 10) In general hazard control measures presented in section 3.0 have generally been identified to be associated with specific project specific operations.
- 11) Section 3.1 Adverse weather has been updated. References to a Hurricane Preparedness Plan have been removed.
- 12) Section 3.3 Air Compressor Operations. Hazard control measures for Air Compressor Operations have been added.
- 13) Section 3.4 Asbestos. Project Specific Asbestos and general Asbestos Awareness information has been added.
- 14) Section 3.7 Confined Space. Hazard control measures for Confined Space Operations have been added.
- 15) Section 3.10.1 Demolition/Dismantling Planning has been moderately revised with regard to the presence and management of Oil and Hazardous Materials. In addition, section 3.10.3 General Requirements has been revised to reflect the removal of any UST system Fire Suppression devices prior to the demolition of the UST Canopy/Fuel Island.
- 16) Section 3.11 Drilling/Direct Push Technology. Hazard control measures for this operation have been added.

- 17) Section 3.13 Excavation Activities has been slightly revised throughout. The most significant change is the following: "The installed excavation sheeting system shall be in accordance with the project design drawings contained in the Remedial Action Work Plan and the selected excavation sheeting subcontractors final design drawings. These final design sheeting drawings shall be stamped by a registered professional engineer, with jurisdiction or reciprocal jurisdiction in the State of Maine."
- 18) Section 3.14 Fall Protection was added to the HSP.
- 19) Section 3.15 Fire Prevention was modified slightly to identify criteria for fire extinguisher inspections/maintenance. Additionally, clarifications to Fire Watch procedures for Hot Work operations.
- 20) Section 3.18 Haul Trucks were modified slightly as follows:
  - Stay out of the operating envelop of haul trucks. Do not walk in front of or in back of haul trucks. Ensure you are in the haul truck operator's field of vision. Ground personnel shall not be with in a haul trucks "flip-over radius" when off loading delivered fill or aggregate materials.
  - Haul truck operators shall not be allowed to raise the dump bodies of their hauling vehicles underneath or within 10'ft of Overhead utilities. See Electric Safety in this HSP for proper additional separation requirements when working near power transmission (electric) lines.
- 21) Section 3.20 Land Clearing Operations components were listed as (Reserved).
- 22) Section 3.21 LOTO was adjusted to reflect anticipated project specific conditions were LOTO requirements would apply.
- 23) Section 3.25 Pressure vessel Systems was updated to reflect the potential use of Granular Activated Carbon system vessels.
- 24) Section 3.28 Slips, Trips and Falls. Hazard control measures for slips, trips and falls added.
- 25) Section 3.28 Stairways and Ladders. Hazard control measures for Stairways and ladders was added.
- 26) Section 3.34 Welding and Cutting. More detailed procedures and hazard control measures for Welding and Cutting and using compressed gas cylinders was added.
- 27) Section 3.36.1 Powered Industrial Trucks. Procedures for using Powered Industrial Trucks was added.
- 28) Section 3.38.2 Hazard Communication. The following statement was added. "A hard copy of the AGVIQ, LLC, and CH2MHILL, Inc. Hazard Communication program information and MSDS material shall be provided at the project site." In addition, the SSHO was identified as the main contact in any onsite emergency coordination or communication situation and will ensure offsite emergency agencies have been contacted prior to the start of and verify that emergency contact numbers contained in this HSP are accurate/operational work.
- 29) Sections 3.38.4 and 3.38.5 were changed significantly to address Client reviewer recommendations.
- 30) Section 3.40.7 Bloodborne Pathogens. The section was revised as follows: "In emergency medical situations, certain employees may need to render first aid as a collateral duty in response to workplace accidents or injuries. This category includes the SSHO, site managers/supervisors, or individuals certified in FA and CPR and shall have received training in exercising universal precautions against exposure to bloodborne pathogens as a component to FA/CPR training, which meets the intent of 29CFR1910.1030. This employee training is also complemented by other

regularly scheduled employer training curriculums that are typically executed for the HAZWOPER industry, regulated under 29CFR1910.120/29CFR1926.26. The only worker exposure to bloodborne pathogens anticipated for this project will potentially be to those individuals providing FA/CPR to an injured or “down” worker.”

- 31) Section 5.0 Table 5-1 PPE. The tasks by which Level D, Level D1, D2 or Level C PPE were clarified in more detail.
- 32) Section 6.0 Air Monitoring. Table 6-1 was revised throughout in an attempt to clarify action levels and action level responses.
- 33) Section 6.1 Worker Exposure Monitoring Benzene. This section was added to clarify conditions in where personal exposure monitoring for Benzene would be applicable.
- 34) Section 6.1.1 Perimeter Air Monitoring. This section was added to address the need for Perimeter air monitoring.
- 35) Section 6.2 Calibration was revised to address requirements to calibrate air monitoring equipment on a daily basis before and after use and to document calibration and worker breathing zone air monitoring results. An Air Monitoring Log was included in Attachment 4 of the HSP.
- 36) Section 7.1 Decontamination was revised to include the following requirements. “Collect, properly containerize, label and dispose of all spent of PPE. Collect, properly containerize, label and dispose of all spent decontamination fluid contain for offsite disposal.”
- 37) Section 9.1 Site Control Procedures was revised as follows: “Site workers and visitors shall sign-in and sign-out as they enter and exit the site work boundaries (see Attachment 4).
- 38) Section 9.2.1 Exclusion Zone was modified as follows: “All personnel entering established EZs/CRZs shall log-in and log-out on a daily basis (see Attachment 4).” An Exclusion Zone Log In/Out sheet was included in Attachment 4.
- 39) Section 10.1 Pre-Emergency Planning was modified as follows: “The SSHO will evaluate emergency response actions and readiness status and initiate appropriate follow-up actions. The SSHO in conjunction with the project team management will develop and implement solutions, matching all identified emergency preparedness criteria and implement corrective actions as necessary. Communicate deficiencies in emergency response preparedness as a “lesson learned” to all project personnel.”
- 40) Section 10.4 Emergency Medical Treatment was revised to identify Emergency Decontamination of a “down person” in a EZ.
- 41) Attachment 4, Permits and Forms. Various forms, identified above, were included in Attachment 4 of the HSP.

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Revisions Approved By:



Date:2/22/10

Pending Approval

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## 11.2.1 Revisions (002)

**Revisions Made By: Glen Jackson, CHST, ASP**  
*Health & Safety Officer*  
*AGVIQ, LLC.*

**Date: 02/16/10**



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- 1) Section 1.4 Hazwoper Regulated Activities was revised to include the following:
    - Abatement of Asbestos Containing Material (caulking, tile) from the Rake Tower, Sabino Hill, Phippsburg, ME (by subcontractors under 29 CFR 1926.1101 and Maine DEP - Chapter 425).
    - Removal of limited lead based paint to facilitate final demolition of the Rake Tower, Sabino Hill, Phippsburg, ME. (by subcontractors).
    - Excavation of lead impacted soil at the Rake Tower, Sabino Hill, Phippsburg, ME.
  - 2) Section 1.5 Non Haawoper Regulated Activities was revised to include the following:
    - Final Demolition of the Rake Tower, Sabino Hill, Phippsburg, ME (by subcontractors).
  - 3) Section 1.6, table 1-1 was revised to included an Activity hazard Analysis basis for the "Excavation and Management of Lead Impacted Soil and Confirmation Sampling". An AHA for this DFOW was also included in Attachment 7 of the HSP.
  - 4) The table in section 2.1 Employee Training and Medical Surveillance was updated to include a requirement for Lead Awareness training meeting the intent of 29CFR1910.1025(l)/29CFR1926.62(l) personnel performing removal of lead impacted soil.
  - 5) Section 3.4 Asbestos was updated to include the following:
    - the limited removal of ACM caulking between metal panels the Sabino Hill Rake Tower structure in Phippsburg, METhe general reference to ACM removal operations at the Sabino Hill Rake Tower site was also included.
  - 6) Table 3-1 in section 3.8 Constituents of Concern was updated to include site COC data for Arochlor 1254 and lead.
  - 7) Sections 3.8.3 "Lead", 3.8.4 "Lead Awareness Information - General" and 3.8.5 "Lead Compliance" were added to address proposed excavation of lead impacted soil at the Sabino Hill Rake Tower site in Phippsburg, ME.
  - 8) Section 3.8.7 "Respiratory Protection" was updated to include a reference to use respiratory protection "where particulate air monitoring results during soil excavation activities at the Sabino Hill Rake Tower site exceed 2.5 mg/m<sup>3</sup>".
  - 9) Section 3.8 Radiological Hazards was updated to "Biological, Chemical, Radiological and Nuclear" Hazards and Controls.
  - 10) Section 3.10 Demolitions and Dismantling was revised to include a reference to the demolition work to the Sabino Hill Rake Tower Site.
  - 11) Section 3.13 Excavation Activities was updated to reference lead impacted soil removal activities at the Sabino Hill Rake Tower Site.

- 12) Section 3.15 "Fire Prevention" was updated to include revised Fire Prevention information for AGVIQ-CHMHILL.
- 13) Sections 4.1 Activity Hazard Analysis, 4.2 Pretask Safety Plans and 4.3 Loss Prevention Observations were updated to reflect current information about the use of these BBLPS tools by AGVIQ-CHMHILL Joint Venture personnel. Section 4.3.1 Deficiency Tracking System was also added.
- 14) Section 5-1 Personal Protective Equipment was updated to provide direction on the use of PPE for the Rake Tower Structure Demolition, removal of ACM from panels on the Rake Tower Structure, limited removal of lead paint from the tower and excavation of lead impacted soil at the tower.
- 15) Table 6-1 was updated to provide requirements for personal and perimeter lead air monitoring during soil excavation of lead impacted soil at the Sabino Hill Rake Tower site.
- 16) Section 6.3 "Exposure Monitoring - Lead" was added to address requirements associated with the excavation of Lead impacted soil at the Sabino Hill Rake Tower site.

Attachment 1  
Accident Prevention Plan

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# Accident Prevention Plan

## Naval Exchange Service Station UST and Soils Removal

Naval Air Station Brunswick  
Brunswick, Maine

Revision No. 00  
Contract No. N62472-08-D-1006  
Task Order No. WE01

Submitted to:



U.S. Naval Facilities  
Engineering Command  
LANT

Prepared by:



1000 Abernathy Road  
Suite 1600  
Atlanta, GA 30328

July 2009

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# Acronyms and Abbreviations

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ANSI	American National Standards Institute
APP	Accident Prevention Plan
ASTM	American Society for testing and Materials
CFR	Code of Federal Regulation
CIH	Certified Industrial Hygienist
CPR	cardiopulmonary resuscitation
EMT	emergency medical technician
HSP	Health and Safety Plan
AGVIQ-CH2M HILL	AGVIQ-CH2M HILL Joint Venture
NIOSH	National Institute for Occupational Health
OSHA	Occupational Safety and Health Administration
PPE	personal protective equipment
ROICC	Resident Officer in Charge of Construction
SSHO	Unexploded Ordnance Safety Officer
TBD	to be determined

# 1.0 Signature Sheets

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**Plan Prepared By:**

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**Approved By: Mark Orman, CSP**

**Date: July 13, 2009**

*CH2M HILL Constructors, Inc., Health & Safety Manager  
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**Plan Approval:**



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**Approved By: Angelo Liberatore, CIH**

**Date: July 2009**

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**Plan Concurrence:**

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Signature: \_\_\_\_\_

Venky Venkatesh, AGVIQ-CH2M HILL Joint Venture Project Manager  
**Date: July 2009**

## 2.0 Background Information

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Background information for this project is fully detailed in Sections 1.0 through 1.2 of the Health and Safety Plan (HSP), as well as the project specific Remedial Action Work Plan, for which this Accident Prevention Plan (APP) and HSP are integral components.

## 3.0 Statement of Safety and Health Policy

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The measurement of a successful program includes our ability to execute profitably, on time, without violations and safely. Success can only be achieved when all four components are integrated; therefore, health and safety must be part of every operation, at every responsibility level. It is the intent of the AGVIQ-CH2M HILL Joint Venture (AGVIQ-CH2M HILL) to comply with established standards concerning the health and safety of our employees and create work environments that are free of recognized hazards that may result in an accident, injury or illness. To do this, we must be vigilant in the identification and elimination of acts and conditions that can produce or lead to accidents, injuries, and illnesses in our workplace.

Knowledge of an unsafe act or condition does not make the work safe. When an act or work area condition that is not consistent with the established practices of the AGVIQ-CH2M HILL Health and Safety Program (HSP) is recognized, it is the inherent responsibility of each employee to report such inconsistencies to a supervisor so the act or condition may be evaluated, corrected, controlled, or engineered to a status that does not pose a significant threat. Where an act or condition in the workplace is determined to be Immediately Dangerous to Life and Health of AGVIQ-CH2M HILL employees, work must stop until the condition has been abated.

Management, supervisory, and worker personnel are all entrusted with implementing the policies and procedures of the AGVIQ-CH2M HILL HSP and prepared site specific health and safety documents. Prevention of accidents, injury, and illness is an achievable objective for all employees, at all responsibility levels, for all program operations. It is a basic requirement that each manager and supervisor make the safety of employees under their tenure an integral component of his or her regular management practices. Additionally, it is the duty of each employee to accept and follow established safety policies and procedures established by AGVIQ-CH2M HILL.

No employee shall be required to work at a location that would jeopardize their life or health. Employee cooperation in detecting, controlling, and reporting workplace hazards is a condition of employment. It is critical for AGVIQ-CH2M HILL employees to immediately inform their supervisor of any situation or work area condition that is beyond their ability to correct or control. Employees will not be disciplined or suffer any retaliation for reporting acts or conditions that are not consistent with the policies and procedures outlined by the AGVIQ-CH2M HILL HSP or project specific health and safety documents.

Every effort should be made to provide adequate training to employees; however, if an employee is ever in doubt about how to do a job or task safely, it is his or her duty to ask a qualified person for help. Fellow employees that need help should be assisted. Employees are expected to assist management in accident prevention activities. Everyone is responsible for executing their assigned duties in a safe manner. Every incident (including a near-miss) that occurs in the workplace shall be reported to a first-line supervisor, as soon as possible. Under no circumstances, except in the instance of emergency medical care, should an employee leave the work site without reporting an accident, injury, or illness that occurs in

the workplace. When a workplace accident, injury, or illness occurs, everyone is affected. The success and longevity of our program is directly related to maintaining a healthy and safe working environment for everyone.

### 3.1 Objective

The AGVIQ-CH2M HILL Joint Venture Program objective is to provide a place of employment free of all recognized hazards that are causing or will likely to death or serious physical harm to our employees. This objective can be facilitated by developing and administering an overall Environmental and Health and Safety Program, which establishes written policies and procedures to serve as vehicles through which the program requirements will be implemented.

### 3.2 Purpose

The purpose of this Accident Prevention Plan (APP), in conjunction with the project specific Health and Safety Plan (HSP), is to define the policies, procedures, and requirements that must be implemented for the AGVIQ-CH2M HILL Joint Venture (AGVIQ-CH2M HILL) projects and to establish the responsibilities requirements for management, supervisors, employees, and subcontractors that may participate in the execution of the program projects. It is the intent of this APP and HSP to address applicable requirements set forth by 29 CFR 191029 CFR 1926, EM 385 1-1, Appendix A, and AGVIQ-CH2M HILL policies and procedures incorporated by reference, herein.

### 3.3 Goals

The health and safety goal of the AGVIQ-CH2M HILL program is to eliminate workplace accidents, gain worker acceptance through cooperation and training, and provide our clients with a responsible, well-trained, safety-oriented work force.

AGVIQ-CH2M HILL considers safety the highest priority during work at all project sites and its business offices and has established a goal of **zero incidents**. Projects will be conducted in a manner that minimizes the probability of near misses, injury, illness, and equipment/property damage.

### 3.4 Primary Environmental Health and Safety Program Functions

Following are the primary functions of the Environmental and Health and Safety Program:

- Define the health and safety responsibilities of AGVIQ-CH2M HILL personnel.
- Administer the medical surveillance program.
- Prepare the site health and safety documents that identify project hazards, present appropriate hazard control measures to mitigate identified hazards, and establish guidelines by which program participants shall be expected to operate.

- Provide safety training/maintaining training records.
- Provide safety procedures and protocols to be used at project sites, shops, and offices.
- Conduct accident investigations and maintaining records.
- Verify OSHA adherence to 29 CFR 1910, 29CFR1926, and EM 385 1-1, as applicable to executable contract work.
- Provide guidance and assistance with preparation of safety protocols for specific tasks.
- Promote safety and health consciousness within the program.
- Designate the functional organization of stakeholders with respect to employee safety and health to facilitate corporate and project specific safety and health needs.

### 3.5 Organization and Responsibility for Health and Safety

With AGVIQ-CH2M HILL, the safety and protection of employees, clients, and the community is the first priority. The concern for the implementation of appropriate health and safety measures is focused on field operations but extends to other areas over which we have stewardship. If an activity or condition at a location under our control is determined to be not consistent with our health and safety policies and procedures, all efforts shall be made to correct the situation immediately or as soon as feasibly possible. At no time shall any AGVIQ-CH2M HILL program participant perform duties in a work environment that is immediately dangerous to life and health or in an imminently dangerous situation. In these situations, the task will not proceed until the situation is corrected.

The information included below is intended to supplement the AGVIQ-CH2M HILL project responsibilities included in Sections 2.2 and 10.7 of the HSP, as well as Section 4.0 of this APP.

The **Program Manager** is the primary operational safety official of AGVIQ-CH2M HILL and has overall responsibility for ensuring that AGVIQ-CH2M HILL program participants adhere to the health and safety policies and procedures adopted by AGVIQ-CH2M HILL.

The **Health and Safety Program Administrator (HSPA)** administers the safety program for the AGVIQ-CH2M HILL program and reports directly to the Program Manager with regard to AGVIQ-CH2M HILL program matters. The HSPA is responsible to support and assist program staff in executing the required health and safety policies and procedures adopted by the program for implementation.

The **Health and Safety Program Certified Industrial Hygienist (CIH)** and meets established qualification, training and experience criteria requirements and exhibits sufficient knowledge in health, safety and/or industrial hygiene matters. The CIH acts as the responsible program officer to review and approve all developed project specific Health and Safety Plan and to provide consultation or recommendations with regard to project worker protection and exposure issues. The CIH may also be required to perform the exercise the project/program roles and responsibilities of the HSPA, where required.

The **Site Safety and Health Officer (SSHO)** is responsible for administration and enforcement of the safety procedures and protocols on the project site(s). The SSHO is the primary safety official at the working level. The responsibility for safety is delegated and shared by project managers, alternate site safety officers, and subcontractors' supervisors. At a minimum, the SSHO must perform, or otherwise supervise the performance of, the following:

- Motivate employees and supervisors of subcontractors to adhere to AGVIQ-CH2M HILL's safety policy in each work situation.
- When delegated to do so, the SSHO will schedule, organize, and lead work phase meetings prior to initiating project activities relevant to definable features of work. To do so, the SSHO should have a working knowledge of the appropriate process safety measures for the jobs and tasks they are defining. When in doubt, the SSHO should seek assistance prior to initiating a task. This is the only acceptable way to perform the task. If the task cannot be accomplished without increasing the potential for an employee accident, injury, illness, or property damage, it will not be attempted.
- Explain the safety procedure involved with a task to each employee and check frequently to see that the employee understands and works as instructed.
- Allocate sufficient time for the training and coaching of all employees to ensure that everyone knows the correct procedure for safely accomplishing required tasks. New employees will not be allowed to perform any work until required training is completed.
- Immediately correct unsafe conditions that involve AGVIQ-CH2M HILL employees or subcontractors.
- Ensure that employees are outfitted with and wear PPE as specified by this plan, EM385-1-1, and other AGVIQ-CH2M HILL procedures.
- Set a good safety example.
- Obtain the cooperation of employees and subcontractors. Subcontractor safety performance records will be verified prior to contract award and will be continually monitored during operations.
- Report all accidents, near misses, and property damage in accordance with the Incident Management and Reporting Procedure.

**Every Employee**, regardless of job title, shares the responsibility for safety and must report any "unsafe" or "deficient" work conditions or acts without fear of reprisal. It is imperative that employees observe the following minimum requirements in order to achieve a safe and healthy workplace:

- Each employee must be familiar with this Accident Prevention Plan and the general safety rules herein.
- Each employee will practice procedures and follow all safety rules and regulations for the successful completion of any job task.

- All employees will wear the necessary PPE required for the job or task as specified by the HSP, APP, and other applicable AGVIQ-CH2M HILL requirements.
- The employee will notify their immediate supervisor of any potential workplace hazard or work practice that is not consistent with the AGVIQ-CH2M HILL health and safety policies and procedures and could result in an accident, injury, illness, or destruction of property.
- The employee will report all accidents to an immediate supervisor regardless of whether injury or property damage resulted. This includes all near misses (accidents without injury or damage). This requirement serves to bring unsafe conditions to the attention of management.
- Each employee will be subject to contraband search for safety purposes and for the safety of fellow employees.
- Violations of published safety policies and procedures may be cause for disciplinary actions up to and including dismissal.
- All employees who are taking prescribed medications that could affect work performance or might alter the manner in which they could be treated in an emergency will so advise their supervisor prior to beginning work.

### **3.6 Regulatory Compliance Policy**

It is the intention of AGVIQ-CH2M HILL to adhere to federal, state, local, and client requirements that are applicable to our assigned contract work regarding the health and safety of our employees. It is the responsibility of all personnel to perform all work in accordance with established program requirements. All project personnel will immediately bring any condition regarding safety and health compliance to the attention of supervisory personnel.

AGVIQ-CH2M HILL will also endeavor to ensure that our procured subcontractors adhere to applicable regulatory compliance, by verifying safety performance records, relevant training, and medical surveillance, as applicable.

### **3.7 AGVIQ-CH2M HILL Medical Surveillance**

All employees who perform work at hazardous waste sites or perform emergency response in accordance with 29CFR1910.120(a)(1)(i)-(v)/29CFR1926.65(a)(1)(i)-(v) will be subject to the AGVIQ-CH2M HILL medical surveillance program requirements. This program conforms to the requirements established by 29 CFR 1910.120/1926.65 (f), medical surveillance.

### **3.8 Position Statement on Modified Work**

AGVIQ-CH2M HILL will attempt to eliminate all accidents through strict compliance with OSHA regulations and AGVIQ-CH2M HILL health and safety procedures, as well as

supervisor and employee safety training, safety audits, and constant attention to safety. Should an employee be injured or become ill in the course of and arising from his employment, AGVIQ-CH2M HILL will attempt to provide modified work. Modified work (“light duty”) will be made available in order to bring the injured employee back to the work environment, for the benefit of the employee and the company, whenever medically appropriate.

Employees are expected to return to modified work when medically capable. The work assigned to the injured employee will meet the restrictions set forth by the treating and/or company physician. Examples of modified work include but are not limited to office work, dispatching, and light shop work.

### **3.9 First Aid**

Each facility and work location must be evaluated to determine the potential requirement for medical emergencies. At a minimum, an industrial first-aid kit will be provided. An adequate number of employees with current certification in first aid and cardiopulmonary resuscitation (CPR) will be maintained on the project sites.

The SSHO will ensure that emergency medical attention is readily available. For emergency response and remediation operations, the SSHO will establish the requirement for medical emergency response and identify an emergency medical facility with chemical contamination trauma capability. If site conditions require, a subcontract emergency medical technician (EMT) and/or the availability of ambulance service onsite will be implemented.

Medical Support requirements are also defined by Section 9.2.6 of this APP. Personnel First Aid and CPR training requirements are also identified in Section 2.1 of the HSP.

### **3.10 Review of Health and Safety Statistics**

A designated representative from AGVIQ-CH2M HILL will review and tabulate safety statistics as necessary, from the following:

- OSHA 300A forms
- Incident Reports

### **3.11 Specific Written Safety Procedures/Permits**

In order to provide a safe workplace and communicate specific work requirements, specific tasks are incorporated by reference to our procedures/permits. These procedures/permits deal with specific areas such as confined space, hot work, lock out tag out, etc. Please refer to the HSP for specific reference, by SOP type, to procedures/permits applicable to the execution of this project.

All AGVIQ-CH2M HILL personnel who may be subject to these procedures will receive appropriate training and will be held accountable for adherence to procedure requirements.

## 3.12 State, OSHA, and Other Regulations

Where state regulations or other requirements differ from federal regulation cited in this plan, the more stringent regulation will apply.

## 3.13 Changes

Any user of this plan is welcome to recommend changes. Changes normally result from finding errors, regulatory changes, equipment modification, new equipment purchases, and changes to operation procedures or site conditions. Following is the format for making a recommended change:

Submit a written recommendation to the AGVIQ-CH2M HILL HSPA/CIH via your immediate supervisor. The AGVIQ-CH2M HILL HSPA/CIH will review the recommendation.

After review, the AGVIQ-CH2M HILL HSPA/CIH will determine if the suggestions should be included as an amendment or as new procedure in this plan. Changes to this plan will be distributed immediately upon approval.

## 4.0 Responsibilities and Lines of Authorities

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The following listed AGVIQ-CH2M HILL Small Business Remedial Action Contract (SBRAC) personnel will have the authority to intervene and suspend work in the interest of ensuring adherence to Health and Safety policies and procedures defined by the HSP and APP:

- Sidney Allison AGVIQ-CH2M HILL Program Manager
- Michael Halil AGVIQ-CH2M HILL Deputy Program Manger
- Venky Venkatesh AGVIQ-CH2M HILL Project Manager (overall)
- Rob Lychalk AGVIQ-CH2M HILL Site Supervisor/ SSHO alternate
- Nathaniel Price AGVIQ-CH2M HILL QC / SSHO alternate
- Will Knox AGVIQ-CH2M HILL SSHO
- Angelo Liberatore AGVIQ-CH2M HILL Program CIH
- Mark Orman AGVIQ-CH2M HILL HSPA
- Glen Jackson AGVIQ-CH2M HILL HSPA/ SSHO alternate

### 4.1 Employee Competency

Employee competency, as defined by 29 CFR 1926.32(f) and for areas of executable contract work for which an employee has responsibility, shall be established by the appropriate employer only. Competency shall be determined by employee training, total work experience, professional certification and/or educational degrees. It is the opinion of AGVIQ-CH2M HILL that the above professionals are competent in their areas of expertise with regard to the management, field execution of the contract work, or in the implementation of AGVIQ-CH2M HILL site specific or program health and safety requirements, as applicable. Executable onsite contract work, for which there is a requirement for a competent person to oversee, will not be conducted unless a competent person is available onsite.

Employee training records are available at corporate offices, by electronic means, and maintained on the project site. Depending on the size of the project crew and because of work crew dynamics and scheduling, provision of hard copy employee training and medical surveillance records within the content of this APP or HSP is impractical. AGVIQ-CH2M HILL endeavors to maintain these documents onsite for review and will provide them to government officials for verification upon request.

In addition to the above, the AGVIQ-CH2M HILL Health and Safety Program utilizes a team of Health and Safety Professionals who qualified by experience, training, educational degrees and professional certification (CIH, CSP, CHST, ASP, CHMM) to act as the responsible program officers with regard to the overall project specific and program wide implementation of the AGVIQ-CH2M HILL Health and Safety Program.

## 4.2 Pretask Safety and Health Analysis

Requirements for completing Pre-Task Safety and Health Analysis for performing onsite work must be, at a minimum, in accordance with Sections 4.1 and 4.2, respectively, of the HSP. Activity Hazard Analysis documents applicable to this project are included in **Attachment 7** of the HSP.

The AGVIQ-CH2M HILL individual responsible for site operations (hereinafter designated as Field Team Lead), SSHO or authorized designate, will conduct daily safety meetings at the start of each work shift for onsite personnel and will require subcontractors to follow similar meeting procedures or participate in the AGVIQ-CH2M HILL daily safety meetings. These meeting will be executed in accordance with Section 4.2 of the HSP.

## 4.3 Lines of Authority

Safety responsibilities, accountability, and lines of authority are discussed in Section 2.2 of the HSP and Sections 3.5, 4.0, and 4.5 of this APP. The AGVIQ-CH2M HILL Chain of Command and Incident Reporting Process for this project is included in Sections 10.3 and 10.7 of the HSP.

## 4.4 Non Compliance with Safety Requirements

The AGVIQ-CH2M HILL Joint Venture is composed of two separate and distinct businesses/corporations operating together in a business partner arrangement. Personnel are not “hired” by the AGVIQ-CH2M HILL Joint Venture, but rather by their respective employer, which may be AGVIQ, LLC, their parent company TIKIGAQ Corporation or any of its authorized subsidiaries, or CH2M HILL, Inc. and any of their authorized subsidiaries. Employees of their respective employer are then selected for participation in the AGVIQ-CH2M HILL Joint Venture at the program or project level, or both.

As such, the duty for employee disciplinary action must only be exercised by the employee’s line manager, supervisor, or corporate official, as appropriate. Verbal or written reprimands, suspensions, or terminations shall be in accordance with the requirements established by the individual employer’s policies and procedures and therefore cannot be executed by the AGVIQ-CH2M HILL Joint Venture. However, where AGVIQ-CH2M HILL Joint Venture Program Officers identify program participants who do not adhere to the policies and procedures adopted by the AGVIQ-CH2M HILL Joint Venture Program, program officers and/or corporate officials may request that these identified personnel only participate in certain areas of responsibility or not participate in the program at all.

## 4.5 Managers and Supervisors Safety Accountability

It is the duty of the first line supervisor to motivate employees to adhere to AGVIQ-CH2M HILL’s safety policy and procedures in each work environment. A first line supervisor, for these purposes, is defined as that person designated to give immediate onsite supervision to personnel involved in a task.

All manager and supervisors will have complete knowledge of the safe procedure for all jobs and tasks under their supervision. When in doubt, they will seek assistance of the HSPA/CIH, or other authorized program safety professional, prior to initiating a task. This is the only acceptable manner in which to perform the task. If the task cannot be accomplished safely, it will not be attempted.

Managers and supervisors will:

- Explain the safety procedure involved with a task to each employee and check frequently to see that the employee understands and works as instructed.
- Allocate sufficient time for the training and coaching of all employees to ensure that everyone knows the correct procedure for safely accomplishing required tasks.
- Prevent new employees from performing any tasks until required training is completed.
- Immediately correct unsafe conditions that involve AGVIQ-CH2M HILL employees or contractors.
- Ensure that the employees are outfitted with and wear PPE as specified by this APP, site-specific health and safety plan, other AGVIQ-CH2M HILL procedures, or as directed by the HSPA/CIH, Project Manager, or SSHO.
- Set a good safety example.
- Obtain the cooperation of employees and contractors.
- Provide a safe work environment for employees and contractors.
- Confirm contractor safety performance records have been verified prior to contract award and monitor contractor performance during operations.
- Report all accidents, near misses, and property damage in accordance with the Incident Management and Reporting Procedure.

Establish a safety culture, using the elements of the AGVIQ-CH2M HILL Safety Improvement process, which promotes awareness, encourages participation, and recognizes excellence.

## 4.6 AGVIQ-CH2M HILL “Employee” Responsibility Requirements

Each employee is responsible for their personal safety as well as the safety of others in the area and is expected to participate fully in the *Safety Improvement Process*, particularly the Loss Prevention Observation (LPO) process. The employee must use all equipment provided in an appropriate and responsible manner as directed by the SSHO. All AGVIQ-CH2M HILL personnel will follow the policies set forth in the AGVIQ-CH2M HILL Health and Safety Plan. Site personnel concerned with any aspect of health and safety will bring it to the attention of the Project Manager or SSHO. All project personnel have the authority to stop work, if it is their judgment that serious injury could result from continued activity. The Field Team Lead or SSHO will be notified immediately if this becomes necessary.

Additional notifications must be made to project and program managers in accordance with Figure 10-2 of the HSP. Personnel that knowingly disregard safety policies/procedures may be subject to disciplinary actions in accordance with their employer's established procedure.

## 5.0 Subcontractors and Suppliers

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### 5.1 Subcontractor/Supplier Coordination and Control

AGVIQ-CH2M HILL subcontractor safety performance and compliance with federal alcohol and drug testing requirements will be reviewed prior to being issued a contract for site work. AGVIQ-CH2M HILL subcontractors will comply with the requirements for site safety as outlined in AGVIQ-CH2M HILL HSP, APP, or other policies and procedures to which they have been made aware.

All subcontractors who may be required to execute this contract may not be identified at the time that health and safety documents are prepared for submission or implementation. Because of the potentially dynamic and evolving nature of contract requirements and resultant project scheduling at many points during the project evolution, only partial identification of potential subcontractors who may be selected for our projects is likely. To this end, continuously updating and amending this APP or HSP with potentially selected, newly selected, or approved subcontractors would not be practical or cost effective for all parties concerned.

The AGVIQ-CH2M HILL Joint Venture Program maintains an extensive and detailed process for subcontractor procurement with the Federal Acquisition Regulations (FAR) as the primary driver. The subcontractor selection is based on scope of work pricing, qualifications, safety performance, and best value evaluations.

### 5.2 Subcontractor/Supplier Responsibilities

All subcontractor employees are subject to the same training and medical surveillance requirements as AGVIQ-CH2M HILL personnel, depending on job activity. All activities involving the potential for exposure to hazardous waste materials will require medical and training certification as mandated by 29 CFR 1910.120. All subcontractor personnel will be required to sign in/sign-out of the site daily (**see Attachment 4**) and either conduct or attend a daily AGVIQ-CH2M HILL meeting discussing operations, site specific hazard awareness, or other pertinent issues associated with the scheduled work. All subcontractors involved in construction/remedial activities will document the details of the daily meeting prior to the start of work at the site. At the discretion of the AGVIQ-CH2M HILL Field Team Lead or the SSHO, this function may be completed by AGVIQ-CH2M HILL to facilitate the requirement.

Subcontractors will submit Activity Hazard Analyses for their work activities to the AGVIQ-CH2M HILL SSHO, HSPA or CIH for review. The subcontractor reports directly to the AGVIQ-CH2M HILL Project Manager (overall). The AGVIQ-CH2M HILL Project Manager may designate subcontractor reporting requirements to the AGVIQ-CH2M HILL Field Team Lead/SSHO, or other appropriate designee. All incidents involving subcontractor employees will be reported to the AGVIQ-CH2M HILL Field Team Lead/SSHO and a copy of the subcontractor's injury/illness report will be submitted to the AGVIQ-

CH2M HILL Project Manager (overall) and HSPA/CIH, as soon as possible, but no later than 24 hours.

AGVIQ-CH2M HILL subcontractors are required to acknowledge and adhere to all requirements of the AGVIQ-CH2M HILL Site-Specific HSP, which includes this APP and/or their own HSP, where specifically applicable to the subcontractor's specialized work or where subcontractor's work is not addressed by the AGVIQ-CH2M HILL HSP and APP. Plans to address specific hazards may be added to the HSP/APP during the course of work. AGVIQ-CH2M HILL subcontractors will be required to sign off and comply with any such supplemental plans. Subcontractors not in compliance will be immediately dismissed from the site.

Suppliers delivering materials to the project site or providing equipment and equipment maintenance will comply with all rules and regulations specified by the owner. Supplier personnel will not be permitted into contaminated areas unless training and medical surveillance is in accordance with 29 CFR 1910.120(f). Contractors will not ride on tractors, forklifts, or similar vehicles unless specific seats are provided. They will follow Facility hot work rules if hot work is required for vehicle or equipment maintenance. Trucks will be loaded and unloaded in a safe and effective manner and materials will be stored safely in designated locations only. Associated packaging will be properly disposed and litter will not be permitted to be scattered or blown from truck beds. Operators of mobile equipment onsite must observe all traffic rules such as speed limits and pedestrian rights-of-way.

# 6.0 Training

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## 6.1 Safety Training

AGVIQ-CH2M HILL engages in environmental remediation, construction, and other services, and endeavors to comply with the numerous health and safety training requirements mandated by governmental agencies, clients, and internal policies.

Personnel will be provided sufficient training to execute their jobs in a safe and healthy manner.

Direct supervisors are responsible to determine the training requirements of a task and ensure employees have the necessary training to complete the task safely. Designated Health and Safety personnel will assist with this determination and training.

Designated employer personnel and electronic databases will facilitate the maintenance of training records and applicable experience documentation. When an employee is identified as lacking sufficient training or experience to perform an assigned task, every effort will be made to provide the necessary training or to provide a trained and experienced alternate until the employee has achieved the required criteria.

Employee training records are available at corporate offices, electronically, and on the project site. Depending on the size of the project crew, provision of hard copy employee records within the content of this APP or HSP would be impractical, but must be maintained onsite and will be provided to government officials for verification upon request.

## 6.2 Safety Indoctrination Subjects

Outlines of the site safety orientation for AGVIQ-CH2M HILL and subcontractor personnel and visitors are provided in Sections 1.0 and 2.2 of the HSP.

## 6.3 Mandatory Training and Certifications

Mandatory training and certification requirements are identified in Section 2.1 of the HSP, Employee Medical Surveillance and Training. All site personnel entering an exclusion zone (EZ) or performing designated Hazardous Waste Operations, Emergency Response Operations, or other tasks that may require specific training will be trained to meet the requirements that may be applicable to the individual's assigned tasks.

## 7.0 Safety and Health Inspections

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The AGVIQ-CH2M HILL Project Manager, Field Team Lead, or SSHO are required to perform site inspections using the designated checklists included herein by reference or contained in referenced SOPs. The inspection will be made by the Site Superintendent or Supervisor, Field Team Lead, SSHO, or other designated AGVIQ-CH2M HILL representative. Discrepancies found during inspections will be corrected as soon as practicable and documented in a deficiency tracking log (**Attachment 4** of the HSP) or Loss Prevention Observation form (**Attachment 9** of the HSP). Serious inconsistencies will be corrected immediately. Inspections that identify Imminent Danger or Immediately Dangerous to Life and Health situations will require that work be immediately stopped and personnel removed from the work area until the situation is abated, corrected, or controlled to a non-hazardous condition.

The Field Team Lead or SSHO is responsible for conducting and preparing reports of daily inspections of work processes, site conditions, and equipment conditions, and submitting them for the project record, as necessary. Corrective actions resulting from discrepancies identified during inspections will be reviewed with the Project Manager (overall) and implemented, as necessary. Copies of these reports are maintained on file at the project locations. Additionally, copies will be forwarded to the AGVIQ-CH2M HILL HSPA.

The AGVIQ-CH2M HILL HSPA/CIH or his designated representative may periodically conduct site visits and perform Site Safety Assessments. Additionally, the AGVIQ-CH2M HILL HSPA/CIH or designated representative may make periodic unannounced inspections of work sites at their own discretion or at the request of an employee, supervisor, manager, or client. Any discrepancies identified as part of these inspection processes will be addressed with the Project Manager (overall), or may be corrected in the field if minor in nature.

AGVIQ-CH2M HILL does not anticipate, but may consider the use of outside sources to provide safety inspections on an as-necessary basis.

As required, AGVIQ-CH2M HILL safety equipment will comply with appropriate OSHA, National Institute for Occupational Safety and Health (NIOSH), American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), and U.S. Coast Guard or other recognized certification organizations.

# 8.0 Accident Reporting and Investigation

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## 8.1 Accident Investigation

All accidents, injuries, illnesses, and incidents of significant property damage will be investigated by the SSHO or other authorized Health and Safety program designate. Upon completion of such investigations, reports shall be provided to the AGVIQ-CH2M HILL Project Manager (overall) for review and circulation to AGVIQ-CH2M HILL program stakeholders (HSPA/CIH, Program/Deputy Program Manager, other potential AGVIQ-CH2M HILL stakeholder interests).

The AGVIQ-CH2M HILL HSPA/CIH or authorized designee will investigate serious accidents. Such serious accidents include, but may not be limited to those accidents, injuries, or illness to the following:

- A fatal injury
- A hospitalization of three or more people resulting from a single occurrence
- A weight handling equipment incident
- A permanent total disability
- A permanent partial disability
- Property damage of \$200,000 or more

The AGVIQ-CH2M HILL HSPA/CIH may also request that a specific written accident investigation be conducted in case of an unusual or serious injury or accident. In general accident, injury, illness, and property damage incident reports will be performed in accordance with the requirements in Section 4.4 of the HSP.

## 8.2 Exposure Data (Man-hours Worked)

The AGVIQ-CH2M HILL Joint Venture is composed of two separate and distinct businesses/corporations operating together in a business partner arrangement. Both corporations log and record information related to annual labor hours and workplace accidents, injuries, and illnesses as required under 29CFR1904. In this manner, AGVIQ, LLC and CH2M HILL, Inc. must individually record and summarize information separately. Where annual summary postings are required under 29 CFR 1904.32(b)(6), they will be posted as separate 300A logs for AGVIQ, LLC and CH2M HILL, Inc. However, a designated representative from AGVIQ-CH2M HILL will tabulate expended labor hours and recordable injuries, illnesses and lost time work cases that are relevant to the AGVIQ-CH2M HILL Joint Venture Program as they occur, from OSHA 300 or 300A logs and other pertinent available information to verify Program safety performance.

The AGVIQ-CH2M HILL HSPA with assistance from designated AGVIQ-CH2M HILL personnel tracks and maintains incident records that apply to federal reporting requirements (OSHA 300 Log).

### **8.3 Accident Investigations, Reports, and Logs**

Incident investigations for the AGVIQ-CH2M HILL Joint Venture shall be in accordance with Section 4.4 of the HSP. The AGVIQ-CH2M HILL HSPA, or his designee, conducts accident/incident investigations. Incident investigation reports are completed by the SSHO or other authorized designee and will be reviewed and acknowledged by the Project Manager (overall). The report must be submitted to the Project Manager and HSPA, as soon as possible, but no longer than 24 hours.

### **8.4 Immediate Notification of Major Incidents**

AGVIQ-CH2M HILL will immediately notify the Base contact/Navy RPM/ROICC/EIT of any major incident, including injury, fire, equipment or property damage, and environmental incident. A full report will be provided within 48 hours. Procedures to be followed in response to any project incident are detailed in Section 10.3, Incident Reporting, Investigation, and Response of the HSP and Section 10.7, Incident Notification and Reporting of the HSP.

# 9.0 Plans Required by the Safety Manual

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## 9.1 Layout Plans

Site Layout Plans, drawings, or sketches are included in the project specific Remedial Action Work Plan, for which this APP and HSP are integral components.

## 9.2 Emergency Response Plans

The emergency response preparedness procedures are included throughout Section 10 of the HSP.

### 9.2.1 Procedures and Tests

It is the intention of the project team to verify that emergency response processes are in place and capable of being executed, prior to the start of field assignments. Pre-Emergency Planning procedures for this project are included in Section 10.1 of the HSP. However, because response to medical or fire emergencies will be by government facility installation personnel or even by outside public responders, it may be impractical and disruptive to the primary mission of these responders to perform procedural response testing. In this case, the designated responsible party (Field Team Lead) shall verify that emergency services are available for response, that contact information is appropriate, and that responders know how to access anticipated work areas.

### 9.2.2 Spill Plans

Spill prevention shall be conducted in accordance with the information identified in Section 8.0 Spill Containment Procedures, of the HSP.

### 9.2.3 Firefighting Plan

AGVIQ-CH2M HILL personnel are not considered Firefighting Organizations. Only small fires that are containable by the use of first response fire protection equipment may be controlled by AGVIQ-CH2M HILL personnel. All other response shall be considered firefighting measures and shall be conducted by facility provided or public agency firefighting teams.

Fire prevention measures and first response fire protection equipment shall be conducted in accordance with the information identified in Section 3.0 Project Hazards – Fire Prevention, and Section 10.2 Emergency Equipment and Supplies, of the HSP.

### 9.2.4 Posting of Emergency Telephone Numbers

Emergency contact numbers appropriate to project operations are included in **Attachment 11** of the HSP and referenced as the Emergency Contact List. Where temporary construction facilities are established at the project site, this Emergency Contact List shall be posted in a conspicuous location. Where temporary construction facilities are not allowed or provided,

the list shall be available for quick reference by the individual(s) responsible for site operations and location shall also be made known to other site personnel.

### 9.2.5 Man Overboard / Abandon Ship

(Reserved)

### 9.2.6 Medical Support

Medical support and evacuation processes shall be in accordance with Section 10 of the HSP. Location and direction to medical support facilities shall be posted in a conspicuous location where temporary construction facilities are established at the project site. Where temporary construction facilities are not allowed or provided, the list shall be available for quick reference by the individual(s) responsible for site operations and location shall also be made known to other site personnel.

In addition, the project shall be outfitted with first aid kits of suitable size and quality (contents) to meet health and safety requirements for onsite first aid or CPR response. Personal protective devices shall be provided such that universal precautions against bloodborne pathogens can be exercised while administering CPR or first aid. Eye wash stations, either portable or stationary, will be available.

An effective means of communication and to summon transportation of injured workers to medical treatment facilities must be evaluated and established prior to the start of field activities. Communication devices shall be tested in the area of use to assure functionality.

When a medical facility or physician is not accessible within five minutes of an injury to a group of two or more employees for the treatment of injuries, at least two employees on each shift shall be qualified to administer first-aid and CPR.

## 9.3 Plan for prevention of Alcohol and Drug Abuse

The AGVIQ-CH2M HILL substance abuse program is in accordance with Section 4.5 of the HSP.

## 9.4 Site Sanitation Plan

Toilet facilities on construction sites shall be provided as follows:

Minimum Toilet Facilities at Construction Sites	
Number of Personnel	Number of Toilets
20 or fewer	One
20 or greater	One toilet seat and one urinal per 40 workers
Greater than 200	One toilet seat and one urinal per 50 workers

The above requirements do not apply to mobile crews or to normally unattended work locations if employees working at these locations have transportation immediately available

to nearby toilet facilities. Separate toilet rooms for each sex need not be provided if toilet rooms can only be occupied by one person at a time can be locked from the inside, and contain at least one toilet seat.

Toilet facilities shall be constructed so the occupants are protected against weather and falling objects; all cracks shall be sealed; and the door shall be tight-fitting, self-closing, and capable of being latched. Adequate ventilation shall be provided and all windows and vents shall be screened. Toilet facilities shall be constructed so that the interior is lighted. Provisions for routinely servicing and cleaning all toilets and disposing of the sewage shall be established before placing toilet facilities into operation. The method of sewage disposal and the location selected shall be in accordance with federal, state, and local health regulations.

Washing facilities shall be provided at toilet facilities and as needed to maintain healthful and sanitary conditions. Each washing facility shall be maintained in a sanitary condition and provided with water (either hot and cold running water or tepid running water), soap, and individual means of drying. If it is not practical to provide running water, hand sanitizers may be used as a substitute. Washing facilities shall be close to the worksite.

Trash and garbage generated by the normal site operations must be properly stowed, containerized, and secured such that vermin will not be attracted.

## 9.5 Access and Haul Road Plan

Site access and haul road delineations are included in the project specific Remedial Action Work Plan, for which this APP and HSP are integral components.

## 9.6 Respiratory Protection Plan

Section 3.8.8 of the HSP identifies Respiratory Protection requirements for this project. Section 5.0 of the HSP, Table 5-1 identifies when respiratory protection may be required for this project.

## 9.7 Hazard Control Program

The AGVIQ-CH2M HILL hazard control program is defined by the entire contents of the HSP and APP, as well as documents included by reference.

## 9.8 Hazard Communication Program

The Site-Specific Hazard Communication information is included in Section 3.0 of the HSP, Project Hazards - Hazard Communication, as well as Section 3.0 of the HSP, Project Hazards - Constituents of Concern. Hazard Communication awareness training can be accomplished using the Chemical-Specific Training and Project-Specific Chemical Product Hazard Communication Forms contained in **Attachment 6** of the HSP. MSDS information associated with this project is not included herein, for submission, due to the potential volume of necessary information. It is the intent of the project to compile MSDS information

for inclusion in the hardcopy version of the HSP used for implementation on the project site and inserted in **Attachment 5**, for inclusion in the project record.

## **9.9 Process Safety Management**

(Reserved)

## **9.10 Lead Abatement Plan**

(Reserved)

## **9.11 Asbestos Abatement Plan**

At this time, the only Asbestos Containing Material (ACM) that will be encountered at the site will be during the removal and relocation of a non-friable transite water line that traverses through the proposed remedial excavation area. Removal of this line will not be performed by AGVIQ-CH2MHILL personnel as it must be performed by a trained and licensed asbestos removal contractor in accordance with Maine DEP Asbestos Management Regulations - Chapter 425. Asbestos handling procedures for this operation shall be provided to the project Resident Officer In Charge of Construction (ROICC) under separate cover for review.

## **9.12 Radiation Safety Program**

(Reserved)

## **9.13 Abrasive Blasting**

(Reserved)

## **9.14 Heat/Cold Stress Monitoring Program**

The heat stress monitoring program shall be conducted in accordance with the information identified in Section 3.0 of the HSP, Project Hazards - Heat Stress Monitoring and Cold Stress Monitoring, as applicable.

## **9.15 Crystalline Silica Monitoring Plan**

(Reserved)

## **9.16 Night Operations Lighting Plan**

No night operations will be conducted for the execution of this project. However, project visible lighting requirements shall be in accordance with the information provided in Section 3.0 of the HSP, Project Hazards - Visible Lighting.

## 9.17 Fire Prevention Plan

Fire prevention shall be conducted in accordance with the information identified in section 3.0 of the HSP, Project Hazards - Fire Prevention.

## 9.18 Wild Land Fire Management Plan

(Reserved)

## 9.19 Hazardous Energy Control Plan

There are no anticipated conditions in which implementing hazardous energy control will be required for this project. However, because of the importance of its existence it is included herein. This program establishes lock out practices of energy sources that could cause injury to personnel involved at the work site. The lock out program covers all employees and outside contractors affected by the cleaning, repairing, servicing, and adjusting of prime movers, machinery, and equipment. Only authorized employees will perform such work.

- Authorized employees will be instructed in lock out/tag out procedures by their supervisor. Each new or transferred employee will be instructed by the supervisor in lock out procedures. A sufficient number of tags and padlocks will be supplied. During each phase of construction, a representative from AGVIQ-CH2M HILL will be present while the electrical supervisor begins the lock out/tag out process.
- All equipment will be locked out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Do not attempt to operate any switch, valve, or other energy-isolating device bearing a lock.
- Documented periodic inspections will be made periodically by supervisors to ensure that each procedure is being properly followed. The SSHO will ensure these inspections are being performed and keep on record the inspection reports on the job site. The inspection must include a review addressing the employee's responsibilities. Documentation is to include the date of the inspection, equipment on which the procedure was being used, the employees involved, and the person performing the inspection.
- Authorized employees will be certain as to which switch, valve, or other energy isolating devices apply to the equipment being locked out. More than one energy source may be involved. Any questionable identification of sources will be cleared through the supervisors.
- To begin the lock out process, use the following items as a guide. If for any reason the following items are in question, contact your immediate supervisor before moving forward. If more than one individual is required to lock out equipment, each person will place his own personal lock on the energy isolating device(s). One authorized individual and a competent person from the prime contractor (AGVIQ-CH2M HILL) with the knowledge of the crew may lock out equipment for the whole crew. In such cases, it is

the responsibility of the individual to carry out all steps of the lockout procedure and inform the crew when it is safe to work on the equipment. Additionally, the authorized individual will not remove a crew lock until it has been verified that all individuals are clear and a prime contractor competent person is present.

- Notify all affected employees that a lock out is required.
- If the equipment is operating, shut it down by the normal stopping procedure.
- Operate the switch, valve, or other energy isolating devices so the energy source(s) is disconnected or isolated from the equipment.
- Stored energy, such as capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure must also be dissipated or restrained by methods such as grounding, repositioning, blocking, or bleeding down.
- Lock out energy isolating devices with an assigned individual lock. A second lock will be used if possible by the superintendent.
- After ensuring that no personnel are exposed and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate. CAUTION: Return operating controls to the neutral position after the test.
- Attach a completed accident prevention tag and/or sign on the controls of the machine. The identification tag and/or sign will be coordinated with the electrical contractor and the prime contractor. An AGVIQ-CH2M HILL representative will then make known to the facility personnel affected by this operation the identification of these tags or signs, the procedures in which the contractors will be working, and the electrical supervisor point of contact.
- The equipment is now locked out.
- To restore equipment to service, use the following items as a guide. If for any reason the following items are in question, contact your immediate supervisor before moving forward.
  - When the job is complete and equipment is ready for testing or normal service, check the equipment area to see that no one is exposed.
  - When equipment is clear, remove all locks. The energy isolating devices may be operated to restore energy to the equipment. There must be a supervisor from the electrical contractor and the prime contractor present.
- The included checklist for lock out training is a minimum requirement to provide to new employees. The supervisors must sign, date, and retain in their own records this information. The supervisor must also delivery a copy of this training to the Site Safety Officer.
  - Explain the significance of why a machine is locked or tagged out.

- Explain what an employee is to do (and not do) when encountering a tag or lock on a switch or device they want to operate.
- Explain the importance of notification of affected employees.
- Show the employee the location of all locks, tags, and lock out devices.
- Explain how to recognize the applicable hazardous energy sources.
- Explain the type(s) and magnitude of energy to be isolated on the machinery and how to control that energy.
- Explain the proper sequence of locking out.
- All utility outages will follow the contract specifications, EM 385-1-1, and OSHA standards. The contractors will follow the above information as well as the following:
  - The contractor will supply the required tags and/or locks for each utility outage.
  - PWC Utility outages will be conducted with PWC Utilities, the contractor, and subcontractor.
  - Interior building/ facility utility outages will be coordinated with Facility Manager, the contractor, and the subcontractor.
  - A preparatory meeting will be held prior to all electrical work and utility outages. This meeting will also cover any safety issues that may pertain to the scope of work. The Activity Hazard Analysis will be reviewed and any additional concerns will be annotated on this form.

In addition to the above, Hazardous Energy Control shall be in accordance with the information identified in Section 3.0 of the HSP, Project Hazards - Lock-Out/Tag-Out.

## 9.20 Critical Lift Plan

(Reserved)

## 9.21 Contingency for Severe Weather Plan

See HSP Section 3.1 "Adverse Weather"

## 9.22 Float Plan

(Reserved)

## 9.23 Site Specific Fall Protection and Prevention Plan

(Reserved)

## **9.24 Demolition Plan**

The Project Demolition Plan shall be in accordance with section 3.10, Demolition of the site specific HSP and task specific procedures contained in the Project Remedial Action Work Plan.

## **9.25 Excavation/Trenching Plan**

Excavation activities will be executed on this project, in order to complete the proposed remedial action objectives. Detailed excavation and sheeting installation operations are contained in the Project Remedial Action Work Plan and need not be provided in this section. Procedures hazard control procedures that must be executed during excavation operations are contained in section 3.0 of the HSP, titled "Excavation Activities".

## **9.26 Emergency Rescue (Tunneling)**

(Reserved)

## **9.27 Underground Construction Fire Prevention and Protection Plan**

(Reserved)

## **9.28 Compressed Air Plan**

(Reserved)

## **9.29 Formwork Shoring and Removal Plan**

(Reserved)

## **9.30 Precast Concrete Plan**

(Reserved)

## **9.31 Lift Slab Plans**

(Reserved)

## **9.32 Steel Erection Plans**

(Reserved)

### **9.33 Site Safety and Health Plan (Hazwoper)**

A Site Specific HSP for Hazwoper operations is a comprehensive document contained in Sections 1.0-11.0 of the HSP and its attachments.

### **9.34 Blasting Safety Plan**

(Reserved)

### **9.35 Diving Plan**

(Reserved)

### **9.36 Confined Space Program**

(Reserved)

# 10.0 Risk Management Process

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Project specific hazards and hazard control measures are identified in Section 3.0 of the HSP. A detailed Activity Hazard Analysis for each major phase of work is included in **Attachment 7** of the HSP.

Attachment 2  
Employee Signoff Form

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**Attachment 3**  
**Subcontractor H&S Tracking Form**

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Attachment 4  
Project H&S Forms/Permits

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## EQUIPMENT INSPECTION FORM

This form will be used to document AGVIQ-CH2MHILL earthmoving equipment inspections. Earthmoving equipment will be inspected each day and shift prior to use. All components will be inspected for damage and proper operation. Any component failing the inspection will be corrected prior to earthmoving equipment use. Check each box after passing inspection and initial bottom of form each day.

Equipment Name: \_\_\_\_\_ Identification #: \_\_\_\_\_ Week of: \_\_\_\_\_

INSPECTION ITEM	Mon	Tue	Wed	Thu	Fri	Sa	Sun
<b>Visual Checks</b>							
Operating manual – present							
Controls - labeled as to their function, visible and legible, safety latches/guards present							
Tires/tracks – proper inflation/tension, not excessively worn or damaged							
Fluid levels/leaks - engine, transmission, hydraulic, radiator, swing motor and PTO oils.							
Lubrication - to the manufacturer's specifications							
Air filter gauge - gauge is not in the red zone.							
Hydraulics – no fluid leaks, connections tight, hoses, cylinders free of damage.							
Hoses/belts – held securely, not loose or rubbing, no excessive wear or crimping							
Fuel system - tank free of damage, all valves/hoses secure, no leaks							
Body & ground-engaging tools – no damage, cracks, bends, or excessive wear.							
Cylinders/articulation joints– no worn pins, loose connections or other damage.							
Roll-over protective structures (ROPS) - no damage, no cracks or bends							
Seat belt/bar – required unless operator stands or no ROPS							
Handrails, steps, platforms – clean, free from grease, oil, clear of obstructions.							
Cab glass – safety glass, clean, no cracks or visible distortion							
Mirrors – properly adjusted, no cracks or visible distortion							
Windshield wipers, fluid, and defroster - functioning							
Machine guards – present and in good condition							
1. Fire extinguisher – present and charged							
<b>Operational Checks – check items through normal maneuvers</b>							
Horn & back-up alarm – operating and distinguishable from surrounding noise							
Lights, directional signals, and brake lights - functioning							
Gauges/indicators – visible and working properly							
Operating controls - lift and tilt functioning properly							
Outriggers, if present – functioning properly							
Accelerator - even acceleration, does not stick							
Brakes (service & parking) - brings to complete stop, holds in fixed position							
Steering – responsive, minimal looseness							
Exhaust system – guarded if potential for contact, no signs of sparks/leaks							
<b>Inspector's Initials</b>							

# EQUIPMENT OPERATOR EVALUATION FORM

Page 1 of 2

AGVIQ-CH2MHILL Joint Venture (JV) employees who are required to operate earthmoving equipment will be evaluated and approved as qualified earthmoving equipment operators by an authorized JV Earthmoving Equipment Operator Evaluation Designated Persons (DP).

This form will be used by the DP to assess, approve, and document the qualifications of JV IIIA employees who are required to operate earthmoving equipment.

Employee (Operator) Name: \_\_\_\_\_ Employee #: \_\_\_\_\_

Company: \_\_\_\_\_ Business Group: \_\_\_\_\_ Region: \_\_\_\_\_

Type of equipment to be operated: \_\_\_\_\_

## 1. Background Review

Resume and other documentation (training certificates) will be reviewed and verified with previous employers. The individual will also possess a valid driver's license. This review should take place prior to hiring.

Background Review found to be adequate. Date: \_\_\_/\_\_\_/\_\_\_ DP initials: \_\_\_\_\_

## 2. Classroom Evaluation

- a. Employee will read and understand the manufacturer's Equipment Operation Manual for the specific piece of equipment to be operated.
- b. Employee will read and understand the CH2M HILL *Earthmoving Equipment* (HSE-306) and *Excavations* (HSE-307) Standards of Practice.
- c. DP will discuss safe operating practices with the employee.
- d. Employee will pass CH2M HILL written earthmoving equipment operator exam. (See Attachment 4 for exam guidelines)

Classroom Evaluation successfully completed. Date: \_\_\_/\_\_\_/\_\_\_ DP initials: \_\_\_\_\_

## 3. Field Evaluation

### a. Equipment Awareness, Inspection and Maintenance

The DP will observe the employee perform a daily inspection using the Earthmoving Equipment Inspection Form. The employee will demonstrate the ability to recognize deficient conditions that could affect the safe operation of the equipment. In addition, the operator will demonstrate awareness of the following:

- Location of vital fluid reservoirs
- Location of all lubrication points
- Proper fueling procedures
- Location and function of safety disabling devices (if equipped)
- Location and function of safety devices (fire extinguisher, back-up alarm, seat belt/bar, guards)
- Location of manufacturer warning labels, weight of equipment, and lift capacities labels
- Location and function of all gauges, indicators and controls (horn, lights, mirrors, etc.)
- Acceptable conditions for passing items during daily inspections
- Periodic maintenance requirements









**EXCAVATION ENTRY PERMIT**

This permit will only be used by AGVIQ-CH2M HILL Joint Venture staff when self-performing excavation activities and will be completed by a excavation competent person. A new permit will be completed each day authorizing excavation entry. Personnel entering excavations will verify that a current permit is completed, authorized, and posted at the excavation location prior to entry. Personnel will exit the excavation and notify the excavation competent person of any unsafe condition or violation of this permit.

Excavations are required to be inspected by an excavation competent person each day, as needed throughout the work shift, and after every rain or other event that could increase the potential for excavation cave-in. This permit will document that such an inspection has been conducted and that all precautions have been taken to ensure safe entry.

**GENERAL INFORMATION**

Project/Site Name: \_\_\_\_\_ Task Order Number: \_\_\_\_\_

Name/Location of Excavation: \_\_\_\_\_

Scope of Work Description: \_\_\_\_\_

**EXCAVATION ENTRY PRECAUTIONS**

- No tension cracks/fractures or evidence of caving, sloughing, or weak zones observed in soil
  - Precautions taken to prevent surface water from entering excavation
  - Water is not accumulating in excavation
  - When water removal equipment used, it is monitored for proper operation
  - Air monitoring conducted for excavations with hazardous atmospheres potential
  - If hazardous atmosphere, ventilation used to bring conditions to safe level and tested frequently
  - If ventilation unable to bring conditions to safe level, appropriate respiratory protection used
  - Rescue equipment provided where potential for hazardous atmospheres exists
  - Protective systems provided to prevent excavation cave-in
  - Protective systems used:  Benching  Sloping  shoring  Trench Box  Combination
- Describe: \_\_\_\_\_

- Protective systems inspected and are free from damage and in stable condition
- Sloping cut to appropriate angle of incline for soil classification
- shoring installed according to design and secured from movement
- Hydraulic shores maintained at designed pressure
- Trench boxes not subjected to loads exceeding design limits
- Vehicular traffic diverted an adequate distance from excavation
- Spoil piles, equipment, and materials restrained or kept at least 2' (61 cm) from excavation edge
- Protection provided from material falling/rolling into excavation
- Safe means of egress provided every 25' (7.6 m) inside excavation
- Personnel entering excavation briefed and understand planned work and safety precautions
- Additional precautions taken when entering to repair damaged or unstable protective systems

**ENTRY APPROVAL**

Competent Person Name: \_\_\_\_\_

Excavation Competent Person Signature: \_\_\_\_\_

Date/Time Entry Authorized: \_\_\_\_/\_\_\_\_/\_\_\_\_ \_\_\_\_:\_\_\_\_



# Stop Work Order Form

**REPORT PREPARED BY:**

Name:	Title:	Signature:	Date:

**ISSUE OF NONPERFORMANCE**

<b>Description:</b> _____ _____ _____ _____ _____ _____	<b>Date of Nonperformance:</b> _____
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**SUBCONTRACTOR SIGNATURE OF NOTIFICATION:**

Name:	Title:	Signature:	Date:

*\* Corrective action is to be taken immediately. Note below the action taken, sign and return to CCI.*

**SUBCONTRACTOR'S CORRECTIVE ACTION**

<b>Description:</b> _____ _____ _____ _____ _____ _____	<b>Date of Corrective Actions:</b> _____
--	---

**SUBCONTRACTOR SIGNATURE OF CORRECTION:**

Name:	Title:	Signature:	Date:

### Safety and Occupational Health Deficiency Tracking Log

Item	Date Identified	Identified By	Deficiency Description	Resolution Date	Corrected By	Actual Correction Date
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

Attachment 5  
Material Safety Data Sheets  
(provided onsite as materials are delivered)

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**Attachment 6**  
**Chemical Specific Training Form and Project-Specific Chemical**  
**Product Hazard Communication Form**

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# CHEMICAL-SPECIFIC TRAINING FORM

Location:	Task Order:
SSHO:	Trainer:

## TRAINING PARTICIPANTS:

NAME	SIGNATURE	NAME	SIGNATURE

## REGULATED PRODUCTS/TASKS COVERED BY THIS TRAINING:


The SSC will use the product MSDS to provide the following information concerning each of the products listed above.

- Physical and health hazards
- Control measures that can be used to provide protection (including appropriate work practices, emergency procedures, and personal protective equipment to be used)
- Methods and observations used to detect the presence or release of the regulated product in the workplace (including periodic monitoring, continuous monitoring devices, visual appearance or odor of regulated product when being released, etc.)

Training participants will have the opportunity to ask questions concerning these products and, upon completion of this training, will understand the product hazards and appropriate control measures available for their protection.

Copies of MSDSs, chemical inventories, and the written hazard communication program will be made available for employee review in the facility/project hazard communication file.



Attachment 7  
Activity Hazard Analyses (AHAs)

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**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Mobilization/Demobilization Activities (set-up/breakdown of work area & construction facilities)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Mobilization & Demobilization (set-up/break down of work area & construction facilities)	Adverse Weather	<ul style="list-style-type: none"> <li>• Check internet, local TV weather or radio channels for daily forecasts and plan daily work activities accordingly. Have a portable radio available on-site to monitoring local weather or marine forecasts. If on-site internet or radio monitoring are not available, check with the NAS Brunswick security office if severe weather systems appear to be developing to the east. NAS Brunswick may be able to provide an update local forecast. If not check with home office support personnel who may be able to verify pending regional severe weather conditions.</li> <li>• Frequently observe the eastern skyline for developing rain squalls and thunder storms systems that may developing.</li> <li>• Bring clothing suitable for anticipated daily weather conditions.</li> <li>• Shut down operations during heavy rain/lightning events or high wind conditions. For storms producing lightning, seek safe haven in a grounded structure or rubber vehicle. Implement 30 - 30 rule. Do not seek refuge under trees during electrical or high wind storm events.</li> <li>• Stay away from ravines and gullies during heavy rain events, because of the possibility of flash flood events.</li> <li>• Do not use telephones during electrical storms, except in the case of emergency.</li> </ul>	Standard Level D PPE *  * Work clothes, reflective vests/ high visibility clothing, hard hat, safety glasses and sturdy hard toed work boots that provide sufficient ankle support, hand, hearing and face protection, as dictated by task.
	Biological	<ul style="list-style-type: none"> <li>• Observe ground surfaces, enclosed structures, ground water well heads, surrounding vegetation other site features for presence of spiders, bee/ wasp hives, stinging centipedes etc.</li> <li>• Where exposure to poisonous plants that have oils, berries or needle-like projects could cause skin irritations, infections or allergic reactions use disposable coveralls for protection.</li> <li>• Observe areas for presence of stinging insects. Prior to starting field activities, <b>notify supervisors of known allergies to stinging insects and location of antidotes.</b></li> <li>• Use insect repellent with DEET or other insect repellent to deter being bit by mosquitoes or other stinging/ biting insects.</li> <li>• If there is potential for tick or chigger infestation at the site, personnel shall wear "bug-out" suits or disposable tyvek suits to minimize potential exposures to ticks or other biting insects (i.e., chiggers) in combination with permethrin applied to outer clothing layer (only) or dedicated permethrin impregnated clothing.</li> <li>• Tape pant legs to boots and ensure there are no open seams between boots and pant legs.</li> <li>• Avoid exposure to blood borne pathogens. Use universal precautions against exposure.</li> </ul>	Standard Level D PPE *
	Cuts/Abrasions	<ul style="list-style-type: none"> <li>• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp/cut edges or hand tools.</li> <li>• Avoid use of razor knives. When cutting with knives, cut away from the body and never towards another worker.</li> </ul>	Standard Level D PPE *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Mobilization/Demobilization Activities (set-up/breakdown of work area & construction facilities)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Mobilization & Demobilization (set-up/break down of work area & construction facilities)  (cont.)	Fire Prevention	<ul style="list-style-type: none"> <li>• Use only metal safety cans for storage and transfer of fuel.</li> <li>• Use funnels and nozzles during fueling operations.</li> <li>• Appropriately sized, easily accessible ABC fire extinguisher in work area.</li> <li>• Fire extinguishers must be inspected monthly (inspection tag) and have an annual maintenance/inspection certification (tag) attached to the extinguisher.</li> <li>• Fire extinguishers shall be approved by a nationally recognized testing laboratory and labeled to identify the listing and labeling organization and the fire test and performance standard that the fire extinguisher meets or exceeds.</li> <li>• Secure any applicable NAS Brunswick Hot Work permit from NAS Brunswick Fire Department representatives as necessary.</li> <li>• Only smoke in designated areas. Designated area must be free of combustible/flammable materials.</li> <li>• ASTs for heavy equipment fuel storage should have secondary containment capabilities.</li> </ul>	Standard Level D PPE
	Electric Safety	<ul style="list-style-type: none"> <li>• Ensure that electric connections to temporary construction facilities are performed by qualified/licensed electricians.</li> <li>• Verify electric power sources have been have undergone LOTO process before being worked on.</li> <li>• Use double insulated or properly grounded electric power-operated hand tools</li> <li>• Inspect all extension cords daily for structural integrity, ground continuity, and damaged insulation</li> <li>• Keep all plugs and receptacles out of water/liquids.</li> <li>• Inspect all electrical power circuits prior to commencing work.</li> <li>• If/when electrical extension cords are required to complete work, extension cords must be:                             <ul style="list-style-type: none"> <li>• - Equipped with third-wire grounding.</li> <li>• - Covered, elevated, or protected from damage when passing through work areas.</li> <li>• - Protected from pinching if routed through doorways.</li> <li>• - Not fastened with staples, hung from nails, or suspended with wire.</li> </ul> </li> <li>• - Extension cords and electrical power tools, must have ground fault circuit interrupters (GFCIs) installed.</li> <li>• - Rated to handle the voltage/amperage of equipment.</li> </ul>	Standard Level D PPE
	Hand & Power Tools	<ul style="list-style-type: none"> <li>• Perform daily or more frequent inspections on power tools, as may be needed</li> <li>• Power tools shall only be operated by personnel qualified by prior training or experience.</li> <li>• Ensure that a stable, level, dry work surface is available for the operation of power tools.</li> <li>• All required guards are in place, functioning and utilized.</li> <li>• Hand held power tools equipped with constant pressure switch. Tools inspected before use. Maintain all tools in a safe condition.</li> <li>• Select and use the proper tool for the task.</li> <li>• Do not use tools that have been damaged or repaired in a manner which is not consistent with manufacturer's requirements.</li> </ul>	Standard Level D PPE

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Mobilization/Demobilization Activities (set-up/breakdown of work area & construction facilities)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Mobilization & Demobilization (set-up/break down of work area & construction facilities)  (cont.)	Haul Trucks	<ul style="list-style-type: none"> <li>• Haul truck operators should ensure all persons are clear before operating trucks or equipment. Before moving, operators should sound horn/back-up alarm. All equipment should be equipped with an operational backing alarm.</li> <li>• Haulage trucks or equipment with restricted visibility should be equipped with devices that eliminate blind spots or a spotter must be provided.</li> <li>• Employees should stay off haul roads. When approaching a haul area, employees should make eye contact and communicate their intentions directly with the equipment operator.</li> <li>• All haul trucks must following the designated Haul Route established for the NASB project site.</li> </ul>	Standard Level D PPE *
	High Ambient Temperature	<ul style="list-style-type: none"> <li>• Provide and drink fluids to prevent worker dehydration.</li> <li>• Minimize intake of caffeinated fluids.</li> <li>▪ Institute a proper work-break regiment in a cool area to avoid heat stress symptoms and overexertion.</li> <li>▪ Monitor for signs and symptoms of heat stress (maintain use of buddy system) when the ambient air temperature exceeds 70°F, the relative humidity is high (&gt;50 percent), or when workers exhibit symptoms of heat stress and especially when wearing disposable or other types of coveralls.               <ol style="list-style-type: none"> <li>1) Heat Syncope = Sluggishness or fainting while standing erect or immobile in heat. <i>Treatment = Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.</i></li> <li>2) Heat Rash = Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure. <i>Treatment = Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.</i></li> <li>3) Heat Cramps = Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours. <i>Treatment = Remove to cooler area. Rest lying down. Increase fluid intake.</i></li> <li>4) Heat exhaustion = Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low. <i>Treatment = Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.</i></li> <li>5) Heat Stroke = Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature. <i>Treatment = Cool rapidly by soaking in cool-but not cold-water. Call ambulance, and get medical attention immediately!</i></li> </ol> </li> </ul>	Standard Level D PPE  (light colored clothing)
	Heavy Equipment	<ul style="list-style-type: none"> <li>• Seat belts or other restraint system shall be used by heavy equipment operators.</li> <li>• Perform daily maintenance and inspections on operating equipment. Keep documentation on site.</li> <li>• Use caution around pressurized lines/hoses. Inspect hoses daily for cuts, abrasions and wear.</li> <li>• Equipment shall only be operated by personnel qualified by prior training or experience.</li> <li>• Ensure that a stable ground surface is available for the operation of heavy equipment.</li> <li>• Equipment operators shall not leave the cab of the equipment while they are lifting/controlling a load unless the load has been delivered to its intended transport location or the load has been fully secured (no potential for rolling onto or crushing ground personnel) and the equipment and controls are fully secured/disengaged and equipment is “de-energized”.</li> </ul>	Standard Level D PPE *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Mobilization/Demobilization Activities (set-up/breakdown of work area & construction facilities)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Mobilization & Demobilization (set-up/break down of work area & construction facilities)  (cont.)	Manual Lifting	<ul style="list-style-type: none"> <li>AGVIQ-CH2MHILL or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities, especially lifting operation involving repetitive motions.</li> <li>When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. Use heavy equipment to transfer heavy or awkward loads wherever possible. Have someone assist with the lift – especially for heavy (&gt; 40lbs.) or awkward loads. Do not attempt to manually lift objects that should otherwise be lifted with heavy equipment.</li> <li>Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift. Avoid carrying heavy objects above shoulder level.</li> </ul>	Standard Level D PPE *
	Noise	<ul style="list-style-type: none"> <li>Personnel exposed to loud working environments shall wear hearing protection.</li> </ul>	Standard Level D PPE *
	Overhead Utilities	<ul style="list-style-type: none"> <li>Maintain proper separation between Power Transmission Lines and over overhead utilities during the operation of heavy equipment. See Electric Safety section in HSP for references to proper separation between operating equipment and power transmission lines/overhead utilities.</li> <li>Do not swing operate or swing heavy equipment booms or other components of operating heavy equipment toward overhead utilities. Be cognizant of utility pole guy wire positions.</li> </ul>	Standard Level D PPE *
	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet/steep slopes, stumps/roots, unprotected holes, ditches, rip rap, utilities, ground protrusions (well casings). Observe and avoid areas of unprotected holes, ramps and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Use sturdy hard toe work boots with sufficient ankle support.</li> <li>Institute and maintain good housekeeping practices. Clean Work Areas as activities proceed. Clear/removed materials and debris from pathways and commonly traveled areas as soon as possible.</li> <li>Three points of contact when enter/exiting equipment or when using stairways/ladders.</li> </ul>	Standard Level D PPE *
	Pinched/Struck-by/Caught-in-between	<ul style="list-style-type: none"> <li>Sufficient separation between ground support personnel and any operating heavy equipment must be maintained.</li> <li>Wear reflective vests or high visibility clothing to promote visibility of ground personnel by equipment operators.</li> <li>Isolate equipment swing areas from workers, fixed objects or other equipment. Ground personnel shall avoid positioning themselves between fixed objects, operating equipment. Make/maintain eye contact with operators before approaching equipment. Do not approach equipment from rear or from blind spot of operator. Stay out of the swing radius of operating heavy equipment.</li> <li>Understand and review hand signals. Designate one person to provide hand signals to equipment operators performing lifting/hoisting operations.</li> <li>Ensure equipment has operable back-up alarms. Ensure heavy equipment operator has spotter for obstructed views and backing up.</li> <li>Step away from heavy equipment when adjustments (positioning) are made.</li> </ul>	Standard Level D PPE *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Mobilization/Demobilization Activities (set-up/breakdown of work area & construction facilities)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Mobilization & Demobilization (set-up/break down of work area & construction facilities)  (cont.)	Spill Prevention	<ul style="list-style-type: none"> <li>• Ensure that spill control and spill clean-up and materials are on hand prior to initiating any heavy equipment or fueling operations to prevent entry into sensitive receptors.</li> <li>• <b>Understand notification processes in the event a spill occurs. If a spill should occur on the project implement the following:</b> <ul style="list-style-type: none"> <li>- Ensure all unnecessary persons are removed from the hazard area. Determine the major components in the waste at the time of the spill.</li> <li>- Put on protective clothing and equipment. (Modified Level D or C).</li> <li>- Only properly trained personnel should respond to/mitigate a spill or release</li> <li>- If a flammable/combustible material is involved, remove all ignition sources, and use spark- and explosion-proof equipment for recovery of material.</li> <li>- Remove all surrounding materials that could be especially reactive with materials in the waste.</li> <li>- If wastes reach a storm or sewer drain, dam the outfall by using sand, earth, sandbags, etc. Pump this material out into a temporary holding tank or drums as soon as possible.</li> <li>- Place all small quantities of recovered liquid wastes (55 gallons or less) and contaminated soil into drums for incineration or removal to an approved disposal site.</li> <li>- Apply appropriate spill control media (e.g. clay, sand, lime, etc.) to absorb discharged liquids.</li> <li>- For large spills, establish diking around leading edge of spill using booms, sand, clay or other appropriate material. If possible, use diaphragm pump to transfer discharged liquid to drums or holding tank.</li> </ul> </li> </ul>	Standard Level D PPE *  with upgrade to higher level of protection such as Level D modified or Level C (see HSP) for spill control response
	Visible Lighting	<ul style="list-style-type: none"> <li>• Perform tasks in daylight hours whenever possible. If dawn, dusk or dark work is to be performed portable lighting must be provided to sufficient illuminate work area(s).</li> </ul>	Standard Level D PPE
	Vehicular Traffic	<ul style="list-style-type: none"> <li>• Shut off and secure site vehicles prior to exiting them. Park on level ground where possible. If parking on an incline, engage parking brake. If the vehicle has a manual transmission, ensure the transmission is in gear (not neutral) and the parking brake is engaged before exiting the vehicle.</li> <li>• Exercise caution when exiting traveled way or parking along street— avoid sudden stops, use flashers, etc.</li> <li>• Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier.</li> <li>• All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.</li> </ul>	Standard Level D PPE
	Overhead Utilities	<ul style="list-style-type: none"> <li>• Maintain proper separation between Power Transmission Lines and over overhead utilities during the operation of heavy equipment. See Electric Safety section in HSP for references to proper separation between operating equipment and power transmission lines/overhead utilities.</li> <li>• Do not swing operate or swing heavy equipment booms or other components of operating heavy equipment toward overhead utilities. Be cognizant of utility pole guy wire positions.</li> </ul>	Standard Level D PPE

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Mobilization/Demobilization Activities (set-up/breakdown of work area & construction facilities)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Mobilization & Demobilization (set-up/break down of work area & construction facilities) (cont.)	Other	<ul style="list-style-type: none"> <li>• <b>Verify that EMS services are available and can respond in a prompt manner prior to the start of work.</b></li> <li>• Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>• Buddy System maintained for all phases of work.</li> <li>• Base or Local Emergency medical Service and Fire Dispatch numbers programmed into cellular phones. Have hospital route maps readily available.</li> <li>• Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.</li> </ul>	Standard Level D PPE
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> <li>• Fire extinguisher (with fuel and electrical sources)</li> <li>• Eye wash (small portable type)</li> <li>• Miscellaneous power and manual hand tools.</li> <li>• First Aid/BbPK/CPR shield</li> <li>• Extension chords</li> <li>• Spill Kit</li> <li>• Haul trucks (delivered heavy equipment or materials)</li> <li>• Heavy Equipment (earth moving)</li> <li>• Communication devices</li> </ul>		<ul style="list-style-type: none"> <li>• Visual Inspections of designated work areas identify and address hazardous conditions.</li> <li>• Equipment inspections and maintenance.</li> <li>• Emergency Response equipment Inspections (Fire Extinguishers, Eye wash First Aid/CPR etc.)</li> <li>• Inspections of hand tools (power) and extension chords if used.</li> </ul>	<ul style="list-style-type: none"> <li>• Review AHA with all task personnel</li> <li>• Review Site Specific Health and Safety Plan for new site personnel.</li> <li>• 1<sup>st</sup> Aid/CPR (two people on-site)</li> <li>• Supervisors, SSHO - BBLPS, SCC (10hr Construction Safety) or equivalent</li> <li>• Power tool and heavy equipment operators qualified by previous training or experience.</li> <li>• Qualified equipment operators - Previous training or experience</li> </ul>

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Supervisor Name:

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Date/Time: \_\_\_\_\_

Safety Officer Name:

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Date/Time: \_\_\_\_\_

Site Personnel:

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Date/Time: \_\_\_\_\_

AHA Prepared By: Mark Orman



**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS - Land and Utility Surveys**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Land and Utility Surveys	Adverse Weather	<ul style="list-style-type: none"> <li>• Check internet, local TV weather or radio channels for daily forecasts and plan daily work activities accordingly. Have a portable radio available on-site to monitoring local weather or marine forecasts. If on-site internet or radio monitoring are not available, check with the NAS Brunswick security office if severe weather systems appear to be developing to the east. NAS Brunswick may be able to provide an update local forecast. If not check with home office support personnel who may be able to verify pending regional severe weather conditions.</li> <li>• Frequently observe the eastern skyline for developing rain squalls and thunder storms systems that may be developing.</li> <li>• Bring clothing suitable for anticipated daily weather conditions.</li> <li>• Shut down operations during heavy rain/lightning events or high wind conditions. For storms producing lightning, seek safe haven in a grounded structure or rubber vehicle. Implement 30 - 30 rule. Do not seek refuge under trees during electrical or high wind storm events.</li> <li>• Stay away from ravines and gullies during heavy rain events, because of the possibility of flash flood events.</li> <li>• Do not use telephones during electrical storms, except in the case of emergency.</li> </ul>	Standard Level D PPE * * Work clothes, reflective vests/ high visibility clothing, hard hat, safety glasses and sturdy hard toed work boots that provide sufficient ankle support, hand, hearing and face protection, as dictated by task.
	Biological	<ul style="list-style-type: none"> <li>• Observe ground surfaces, enclosed structures, ground water well heads, surrounding vegetation other site features for presence of spiders, bee/wasp hives, stinging centipedes etc.</li> <li>• Where venomous snakes are known to inhabit or may be present, the use of snake guards must be evaluated</li> <li>• Do not approach fresh or brackish water bodies that could contain alligators.</li> <li>• Where exposure to poisonous plants that have oils, berries or needle-like projects could cause skin irritations, infections or allergic reactions use disposable coveralls for protection.</li> <li>• Observe areas for presence of stinging insects. Prior to starting field activities, <b>notify supervisors of known allergies to stinging insects and location of antidotes.</b></li> <li>• Use insect repellent with DEET or other insect repellent to deter being bit by mosquitoes or other stinging/biting insects.</li> <li>• If there is potential for tick or chigger infestation at the site, personnel shall wear "bug-out" suits or disposable tyvek suits to minimize potential exposures to ticks or other biting insects (i.e., chiggers) in combination with permethrin applied to outer clothing layer (only) or dedicated permethrin impregnated clothing.</li> <li>• Tape pant legs to boots and ensure there are no open seams between boots and pant legs.</li> <li>• Avoid exposure to blood borne pathogens. Use universal precautions against exposure.</li> </ul>	Standard Level D PPE *
	Fire Prevention	<ul style="list-style-type: none"> <li>• Only smoke in designated areas. Designated area must be free of combustible/flammable materials.</li> </ul>	Standard Level D PPE *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS - Land and Utility Surveys**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Land and Utility Surveys  (cont.)	High Ambient Temperature	<ul style="list-style-type: none"> <li>• Provide and drink fluids to prevent worker dehydration.</li> <li>• Minimize intake of caffeinated fluids.</li> <li>▪ Institute a proper work-break regimen in a cool area to avoid heat stress symptoms and overexertion.</li> <li>▪ Monitor for signs and symptoms of heat stress (maintain use of buddy system) when the ambient air temperature exceeds 70°F, the relative humidity is high (&gt;50 percent), or when workers exhibit symptoms of heat stress and especially when wearing disposable or other types of coveralls.               <ol style="list-style-type: none"> <li>1) Heat Syncope = Sluggishness or fainting while standing erect or immobile in heat. <i>Treatment = Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.</i></li> <li>2) Heat Rash = Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure. <i>Treatment = Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.</i></li> <li>3) Heat Cramps = Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours. <i>Treatment = Remove to cooler area. Rest lying down. Increase fluid intake.</i></li> <li>4) Heat exhaustion = Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low. <i>Treatment = Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.</i></li> <li>5) Heat Stroke = Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature. <i>Treatment = Cool rapidly by soaking in cool-but not cold-water. Call ambulance, and get medical attention immediately!</i></li> </ol> </li> </ul>	Standard Level D PPE (light colored clothing)
	Manual Lifting	<ul style="list-style-type: none"> <li>• AGVIQ-CH2MHILL or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities, especially lifting operation involving repetitive motions.</li> <li>• When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. Use heavy equipment to transfer heavy or awkward loads wherever possible. Have someone assist with the lift— especially for heavy (&gt; 40lbs.) or awkward loads. Do not attempt to manually lift objects that should otherwise be lifted with heavy equipment.</li> <li>• Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift.</li> <li>• Avoid carrying heavy objects above shoulder level.</li> </ul>	Standard Level D PPE *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS - Land and Utility Surveys**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Land and Utility Surveys  (cont.)	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>• Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet/steep slopes, stumps/roots, unprotected holes, ditches, rip rap, utilities, ground protrusions (well casings). Observe and avoid areas of unprotected holes, ramps and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Use sturdy hard toe work boots with sufficient ankle support.</li> <li>• Institute and maintain good housekeeping practices. Clean Work Areas as activities proceed. Clear/removed materials and debris from pathways and commonly traveled areas as soon as possible.</li> <li>• Three points of contact when enter/exiting equipment or when using stairways/ladders.</li> </ul>	Standard Level D PPE *
	Visible Lighting	<ul style="list-style-type: none"> <li>• Perform tasks in daylight hours whenever possible. If dawn, dusk or dark work is to be performed portable lighting must be provided to sufficient illuminate work area(s).</li> </ul>	Standard Level D PPE
	Vehicular Traffic	<ul style="list-style-type: none"> <li>• Shut off and secure site vehicles prior to exiting them. Park on level ground where possible. If parking on an incline, engage parking brake. If the vehicle has a manual transmission, ensure the transmission is in gear (not neutral) and the parking brake is engaged before exiting the vehicle.</li> <li>• Exercise caution when exiting traveled way or parking along street— avoid sudden stops, use flashers, etc.</li> <li>• Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier.</li> <li>• All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.</li> </ul>	Standard Level D PPE

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS - Land and Utility Surveys**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Land and Utility Surveys  (cont.)	Other	<ul style="list-style-type: none"> <li>• <b>Verify that EMS services are available and can respond in a prompt manner prior to the start of work.</b></li> <li>• Personnel using survey equipment containing lasers shall be trained to utilize that equipment properly. Personnel operating laser equipped survey equipment must avoid exposing their eyes to direct or indirect laser light energy sources.</li> <li>• Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>• Buddy System maintained for all phases of work.</li> <li>• Base or Local Emergency medical Service and Fire Dispatch numbers programmed into cellular phones. Have hospital route maps readily available.</li> <li>• Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.</li> </ul>	Standard Level D PPE
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> <li>• Eye wash (small portable type)</li> <li>• Miscellaneous power and manual hand tools.</li> <li>• First Aid/BbPK/CPR shield</li> <li>• Communication devices</li> <li>• Land Survey or EM/GPR utility locating equipment (as applicable to task)</li> </ul>		<ul style="list-style-type: none"> <li>• Visual Inspections of designated work areas identify and address hazardous conditions.</li> <li>• Emergency Response equipment Inspections (Fire Extinguishers, Eye wash First Aid/CPR etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Review AHA with all task personnel</li> <li>• Review Site Specific Health and Safety Plan for new site personnel.</li> <li>• 1<sup>st</sup> Aid/CPR (two people on-site)</li> <li>• Supervisors, SSHO - BBLPS, SCC (10hr Construction Safety) or equivalent</li> </ul>

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Supervisor Name:

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Date/Time: \_\_\_\_\_

Safety Officer Name:

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Date/Time: \_\_\_\_\_

Site Personnel:

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Date/Time: \_\_\_\_\_

AHA Prepared By: Mark Orman



**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS – Site Preparation (Including ESC Installation)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Site Preparation (including any ESC installation)	Buried Utilities or Unknown Objects	<ul style="list-style-type: none"> <li>• Contact <b>Dig Safe</b> to secure a utility owner verification request number at 888-344-7233 for utility clearance verification. Keep copies of any written documentation (faxes, email printouts) regarding utility location verification provided by utilities owners in the office project file and in a working field file on-site.</li> <li>• Photo document owner provided field utility mark-outs as related to proposed limits of ground disturbing activities prior to the start of work.</li> <li>• Conduct “third” party utility clearance when the locations of utilities may be in question and document results of third party utility location.</li> <li>• Determine if an NAS Brunswick/NAVFAC “Excavator Permit” is required prior to performing any ground disturbing activities.</li> <li>• Hand dig around identified utilities (within 5’) or as otherwise required by NAS Brunswick issued excavation permit.</li> <li>• Review base engineering records or drawings against utility owner or third party utility mark-out to verify any potential differences.</li> <li>• Protect and preserve the markings of approximate locations of facilities until the markings are no longer required for safe and proper excavations. If the markings of utility locations are destroyed or removed before excavation commences or is completed, utilities must be relocated/marked.</li> <li>• Where unknown or unanticipated buried objects are encountered (i.e. drums, tanks, cylinders, munitions of explosive concern, soil with unusual staining or odor) AGVIQ-CH2M HILL JV or subcontractor personnel shall 1) secure equipment to the extent possible, without causing bodily injury, 2) evacuate the work area and 3) immediately notify the site manager, SSHO or PM of the encountered condition. Work may only resume with appropriate documentation/notification that exposure hazards (physical or chemical) do not exist. Notify AGVIQ-CH2M HILL JV PM and program officials and applicable NAVFAC POCs and do not resume work until authorized to do so.</li> </ul>	<p>Standard Level D PPE *</p> <p>Work clothes, reflective vests/ high visibility clothing, hard hat, safety glasses and sturdy hard toed work boots that provide sufficient ankle support, hand, hearing and face protection, as dictated by task.</p>
	Biological	<ul style="list-style-type: none"> <li>• Observe ground surfaces, enclosed structures, ground water well heads, surrounding vegetation other site features for presence of spiders, bee/wasp hives, stinging centipedes etc.</li> <li>• Where venomous snakes are known to inhabit or may be present, the use of snake guards must be evaluated.</li> <li>• Do not approach fresh or brackish water bodies that could contain alligators.</li> <li>• Where exposure to poisonous plants that have oils, berries or needle-like projects could cause skin irritations, infections or allergic reactions use disposable coveralls for protection.</li> <li>• Observe areas for presence of stinging insects. Prior to starting field activities, <b>notify supervisors of known allergies to stinging insects and location of antidotes.</b></li> <li>• Use insect repellent with DEET or other insect repellent to deter being bit by mosquitoes or other stinging/biting insects.</li> <li>• If there is potential for tick or chigger infestation at the site, personnel shall wear “bug-out” suits or disposable tyvek suits to minimize potential exposures to ticks or other biting insects (i.e., chiggers) in combination with permethrin applied to outer clothing layer (only) or dedicated permethrin impregnated clothing.</li> <li>• Tape pant legs to boots and ensure there are no open seams between boots and pant legs.</li> <li>• Avoid exposure to blood borne pathogens. Use universal precautions against exposure.</li> </ul>	<p>Standard Level D PPE *</p>

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS - Site Preparation (Including ESC Installation)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Site Preparation (including any ESC installation)  (cont.)	Adverse Weather	<ul style="list-style-type: none"> <li>• Check internet, local TV weather or radio channels for daily forecasts and plan daily work activities accordingly. Have a portable radio available on-site to monitoring local weather or marine forecasts. If on-site internet or radio monitoring are not available, check with the NAS Brunswick security office if severe weather systems appear to be developing to the east. NAS Brunswick may be able to provide an update local forecast. If not check with home office support personnel who may be able to verify pending regional severe weather conditions.</li> <li>• Frequently observe the eastern skyline for developing rain squalls and thunder storms systems that may developing.</li> <li>• Bring clothing suitable for anticipated daily weather conditions.</li> <li>• Shut down operations during heavy rain/lightning events or high wind conditions. For storms producing lightning, seek safe haven in a grounded structure or rubber vehicle. Implement 30 - 30 rule. Do not seek refuge under trees during electrical or high wind storm events.</li> <li>• Stay away from ravines and gullies during heavy rain events, because of the possibility of flash flood events.</li> <li>• Do not use telephones during electrical storms, except in the case of emergency.</li> </ul>	Standard Level D PPE *
	Chainsaws/Wood Chipper Use	<ul style="list-style-type: none"> <li>• In the event chainsaw and wood chippers must be used to perform land clearing activities, a separate AHA for this task is required and the HSP must be updated to include Hazard control measures for this operation.</li> </ul>	Develop an AHA for Land Clearing via Chainsaw/ Wood chipper use
	Chemical Exposure	<ul style="list-style-type: none"> <li>• Where installation of ESC measures must disturb of surface or subsurface soil impacted by TPH-GRO constituents may occur, then an upgrade to Level D Modified PPE will be required in accordance with the HSP and performed by personnel having appropriate training and be enrolled in a medical surveillance program in accordance with 29CFR1910.120. Supervisors would also need training in accordance with 29CFR1910.120(e)(4).</li> </ul>	Standard Level D PPE * but upgrade to Level D Modified PPE, as necessary In accordance with the HSP

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS – Site Preparation (Including ESC Installation)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Site Preparation (including any ESC installation)  (cont.)	Cuts/Abrasions	<ul style="list-style-type: none"> <li>• Wear cut resistant work gloves, when the possibility of lacerations or other injury may be caused by sharp edges of power or hand tools.</li> <li>• Make sure the handle is clean and free of cracks or splits and the blade is securely fastened to the handle.</li> <li>• The minimum PPE selection for clearing operations performed with a brush cutter shall be as follows.                             <ul style="list-style-type: none"> <li>– Long trousers, chainsaw chaps, and appropriate footwear (ANSI rated).</li> <li>– ANSI Z87 approved eyewear <u>with</u> a face shield.</li> <li>– A hardhat with the visor facing forward.</li> <li>– Leather work gloves.</li> <li>– Long-sleeved shirt.</li> <li>– Ear muffs</li> </ul> </li> <li>• Verify that the owner’s manual is available to personnel using equipment.</li> <li>• Do not distract or disturb someone who is operating a brush cutter. Before approaching someone using a brush cutter or machete first establish eye contact with the operator and signal (via hand) that they would like to approach the active work area. Both the brush cutter operator and ground personnel must that it is appropriate to other personnel to access the work area.</li> <li>• Use two hands when operating the brush cutter.</li> </ul>	Standard Level D PPE *
	Fire Prevention	<ul style="list-style-type: none"> <li>• Use only metal safety cans for storage and transfer of fuel.</li> <li>• Use funnels and nozzles during fueling operations.</li> <li>• Appropriately sized, easily accessible ABC fire extinguisher in work area.</li> <li>• Fire extinguishers must be inspected monthly (inspection tag) and have an annual maintenance/inspection certification (tag) attached to the extinguisher.</li> <li>• Fire extinguishers shall be approved by a nationally recognized testing laboratory and labeled to identify the listing and labeling organization and the fire test and performance standard that the fire extinguisher meets or exceeds.</li> <li>• Secure any applicable NAS Brunswick Hot Work permit from NAS Brunswick Fire Department representatives as necessary.</li> <li>• Only smoke in designated areas. Designated area must be free of combustible/flammable materials.</li> <li>• ASTs for heavy equipment fuel storage should have secondary containment capabilities.</li> </ul>	Standard Level D PPE *
	Hand & Power Tools	<ul style="list-style-type: none"> <li>• Perform daily or more frequent inspections on power tools, as may be needed</li> <li>• Power tools shall only be operated by personnel qualified by prior training or experience.</li> <li>• Ensure that a stable, level, dry work surface is available for the operation of power tools.</li> <li>• All required guards are in place, functioning and utilized.</li> <li>• Hand held power tools equipped with constant pressure switch. Tools inspected before use. Maintain all tools in a safe condition.</li> <li>• Select and use the proper tool for the task.</li> <li>• Do not use tools that have been damaged or repaired in a manner which is not consistent with manufacturer’s requirements.</li> </ul>	Standard Level D PPE

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS – Site Preparation (Including ESC Installation)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Site Preparation (including any ESC installation)  (cont.)	Heavy Equipment	<ul style="list-style-type: none"> <li>• Seat belts or other restraint system shall be used by heavy equipment operators.</li> <li>• Perform daily maintenance and inspections on operating equipment. Keep documentation on site.</li> <li>• Use caution around pressurized lines/hoses. Inspect hoses daily for cuts, abrasions and wear.</li> <li>• Equipment shall only be operated by personnel qualified by prior training or experience.</li> <li>• Ensure that a stable ground surface is available for the operation of heavy equipment.</li> <li>• Equipment operators shall not leave the cab of the equipment while they are lifting/controlling a load unless the load has been delivered to its intended transport location or the load has been fully secured (no potential for rolling onto or crushing ground personnel) and the equipment and controls are fully secured/disengaged and equipment is “de-energized”.</li> </ul>	Standard Level D PPE *
	High Ambient Temperature	<ul style="list-style-type: none"> <li>• Provide and drink fluids to prevent worker dehydration.</li> <li>• Minimize intake of caffeinated fluids.</li> <li>▪ Institute a proper work-break regiment in a cool area to avoid heat stress symptoms and overexertion.</li> <li>▪ Monitor for signs and symptoms of heat stress (maintain use of buddy system) when the ambient air temperature exceeds 70°F, the relative humidity is high (&gt;50 percent), or when workers exhibit symptoms of heat stress and especially when wearing disposable or other types of coveralls.               <ol style="list-style-type: none"> <li>1) Heat Syncope = Sluggishness or fainting while standing erect or immobile in heat. <i>Treatment = Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.</i></li> <li>2) Heat Rash = Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure. <i>Treatment = Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.</i></li> <li>3) Heat Cramps = Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours. <i>Treatment = Remove to cooler area. Rest lying down. Increase fluid intake.</i></li> <li>4) Heat exhaustion = Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddied, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low. <i>Treatment = Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.</i></li> <li>5) Heat Stroke = Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature. <i>Treatment = Cool rapidly by soaking in cool-but not cold-water. Call ambulance, and get medical attention immediately!</i></li> </ol> </li> </ul>	Standard Level D PPE  (light colored clothing)
	Overhead Utilities	<ul style="list-style-type: none"> <li>• When using an excavator to install ESC measures, maintain proper separation between Power Transmission Lines and over overhead utilities during the operation of heavy equipment. See Electric Safety section in HSP for references to proper separation between operating equipment and power transmission lines/overhead utilities. Do not swing operate or swing heavy equipment booms or other components of operating heavy equipment toward overhead utilities. Be cognizant of utility pole guy wire positions.</li> </ul>	Standard Level D PPE *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS – Site Preparation (Including ESC Installation)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Site Preparation (including any ESC installation)  (cont.)	Manual Lifting	<ul style="list-style-type: none"> <li>• AGVIQ-CH2MHILL or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities, especially lifting operation involving repetitive motions.</li> <li>• When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. Use heavy equipment to transfer heavy or awkward loads wherever possible. Have someone assist with the lift – especially for heavy (&gt; 40lbs.) or awkward loads. Do not attempt to manually lift objects that should otherwise be lifted with heavy equipment.</li> <li>• Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift.</li> <li>• Avoid carrying heavy objects above shoulder level.</li> </ul>	Standard Level D PPE *
	Noise	<ul style="list-style-type: none"> <li>• Personnel exposed to loud working environments shall wear hearing protection.</li> </ul>	Standard Level D PPE *
	Pinched/Struck-by/ Caught-in-between	<ul style="list-style-type: none"> <li>• Sufficient separation between ground support personnel and any operating heavy equipment must be maintained.</li> <li>• Wear reflective vests or high visibility clothing to promote visibility of ground personnel by equipment operators.</li> <li>• Isolate equipment swing areas from workers, fixed objects or other equipment. Ground personnel shall avoid positioning themselves between fixed objects, operating equipment. Make/maintain eye contact with operators before approaching equipment. Do not approach equipment from rear or from blind spot of operator. Stay out of the swing radius of operating heavy equipment.</li> <li>• Understand and review hand signals. Designate one person to provide hand signals to equipment operators performing lifting/hoisting operations.</li> <li>• Ensure equipment has operable back-up alarms.</li> <li>• Step away from heavy equipment when adjustments (positioning) are made.</li> <li>• Ensure heavy equipment operator has spotter for obstructed views and backing up.</li> <li>• When using a chain drive trenching machine for the installation of ESC features, If using trenching equipment, keep hands, feet and arms away from activated drive chains or belts of trench. Stop trenching operations if personnel approach active trenching equipment.</li> <li>• Ensure that all machine guards are in place to prevent contact with drive belts rotary action devises/blades of trenching machine etc. Do not modify safety feature of the trenching machine.</li> </ul>	Standard Level D PPE *
	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>• Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet/steep slopes, stumps/roots, unprotected holes, ditches, rip rap, utilities, ground protrusions (well casings). Observe and avoid areas of unprotected holes, ramps and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Use sturdy hard toe work boots with sufficient ankle support.</li> <li>• Institute and maintain good housekeeping practices. Clean Work Areas as activities proceed. Clear/removed materials and debris from pathways and commonly traveled areas as soon as possible.</li> <li>• Three points of contact when enter/exiting equipment or when using stairways/ladders.</li> </ul>	Standard Level D PPE *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS – Site Preparation (Including ESC Installation)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Site Preparation (including any ESC installation) (cont.)	Vehicular Traffic	<ul style="list-style-type: none"> <li>Shut off and secure site vehicles prior to exiting them. Park on level ground where possible. If parking on an incline, engage parking brake. If the vehicle has a manual transmission, ensure the transmission is in gear (not neutral) and the parking brake is engaged before exiting the vehicle.</li> <li>Exercise caution when exiting traveled way or parking along street— avoid sudden stops, use flashers, etc.</li> <li>Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier.</li> <li>All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.</li> </ul>	Standard Level D PPE
	Visible Lighting	<ul style="list-style-type: none"> <li>Perform tasks in daylight hours whenever possible. If dawn, dusk or dark work is to be performed portable lighting must be provided to sufficient illuminate work area(s).</li> </ul>	Standard Level D PPE
	Other	<ul style="list-style-type: none"> <li><b>Verify that EMS services are available and can respond in a prompt manner prior to the start of work.</b></li> <li>Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>Buddy System maintained for all phases of work.</li> <li>Base or Local Emergency medical Service and Fire Dispatch numbers programmed into cellular phones. Have hospital route maps readily available.</li> <li>Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.</li> </ul>	Standard Level D PPE

EQUIPMENT REQUIRED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> <li>Fire extinguisher (with fuel and electrical sources)</li> <li>Eye wash (small portable type)</li> <li>Miscellaneous power and manual hand tools.</li> <li>First Aid/BbPK/CPR shield</li> <li>Track excavator or chain drive trencher</li> <li>Brush cutter/Hydraulic mower</li> <li>Spill Kit</li> <li>Communication devices</li> </ul>	<ul style="list-style-type: none"> <li>Visual Inspections of designated work areas identify and address hazardous conditions.</li> <li>Equipment inspections and maintenance.</li> <li>Emergency Response equipment Inspections (Fire Extinguishers, Eye wash First Aid/CPR etc.)</li> <li>Inspections of hand tools (power) and extension chords if used.</li> </ul>	<ul style="list-style-type: none"> <li>Review AHA with all task personnel</li> <li>Review Site Specific Health and Safety Plan for new site personnel.</li> <li>1<sup>st</sup> Aid/CPR (two people on-site)</li> <li>Supervisors - BBLPS, SCC or equivalent</li> <li>Power tool and heavy equipment operators qualified by previous training or experience.</li> <li>Training /medical surveillance in accordance with 29CFR1910.120 where TPH-GRO Contaminated soil/water is disturbed.</li> </ul>

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Supervisor Name: \_\_\_\_\_

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Date/Time: \_\_\_\_\_

Safety Officer Name: \_\_\_\_\_

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Date/Time: \_\_\_\_\_

Site Personnel: \_\_\_\_\_

\_\_\_\_\_

Date/Time: \_\_\_\_\_

AHA Prepared By: Mark Orman



**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS - Pre-Demolition Removal of Oil & Hazardous Materials (OHM) from UST System**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Pre-Demolition Removal of OHM from UST System	Chemical Exposure	<ul style="list-style-type: none"> <li>• All personnel performing this task shall be trained in accordance with 29CFR1910.120 and been rolled in a medical monitoring program.</li> <li>• Pregnant or potentially pregnant AGVIQ-CH2MHILL personnel to review Standard of Practice HSE-120, Reproductive Protection before performing any hazardous or potentially hazardous duty.</li> <li>• Do not allow dermal contact or incidental ingestion of impacted soil or groundwater. Skin contact with contaminated water, soils, debris, or equipment shall be avoided at all times. Do not kneel or step in potentially contaminated media (soil or ground water) without first donning proper PPE.</li> <li>• Exercise good hygiene practices. Always wash hands before eating, drinking, smoking and leaving site. Only eat, drink, smoke or chew tobacco in designated areas.</li> <li>• Adhere to PPE and action monitoring level requirements identified in the sections 5.0 and 6.0 of the site specific HSP.</li> </ul>	<p>Level D<sub>1</sub> or D<sub>2</sub> Modified PPE or as required by HSP *</p> <p>D: Work clothes, reflective vests, hard hat, safety glasses and sturdy hard toed work boots, hearing and hand protection as necessary for task.</p> <p>D<sub>1</sub> : D + hand protection (inner and outer chemical resistant gloves)</p> <p>D<sub>2</sub>: D<sub>1</sub>+ chemical resistant suits and boot covers, face protection (as needed)</p>
	Cutting	<ul style="list-style-type: none"> <li>▪ Appropriately sized, easily accessible ABC fire extinguisher in all work areas or heavy equipment.</li> <li>• Review and be cognizant of any specific NAS Brunswick Fire Prevention Procedures and Requirements prior to performing any hot work activities (hot cutting, welding, grinding).</li> <li>• Prior to performing any cutting operations, evaluate if there is any potential for presence or build-up of hazardous atmosphere conditions that would require the use of a multi-gas meter (LEL, O<sub>2</sub>, H<sub>2</sub>S, CO) to verify there are no potentially explosive conditions or hazardous atmospheres in the work area. If the potential exists, verify atmospheric conditions of the work area and document readings. Perform periodic checks of the work area for the duration of the welding and cutting procedure.</li> <li>• During welding or cutting activities, use protective eye wear which meets the shading requirements where light emitting energy is generated. Use face protection, as necessary to mitigate cut/abrasions/injuries to the face that may be associated with the selected cutting method.</li> </ul>	<p>Level D<sub>1</sub> or D<sub>2</sub> Modified PPE or as required by HSP *</p>
	Noise	<ul style="list-style-type: none"> <li>• Personnel exposed to loud working environments shall wear hearing protection.</li> <li>• Wear hearing protection in open cabs of heavy equipment or when working adjacent to operating heavy equipment.</li> </ul>	<p>Level D<sub>1</sub> or D<sub>2</sub> Modified PPE or as required by HSP *</p>

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Pre-Demolition Removal of Oil & Hazardous Materials (OHM) from UST System**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Pre-Demolition Removal of OHM from UST System (Cont.)	Vacuum Truck Operations	<ul style="list-style-type: none"> <li>• <b>Operate vacuum truck in accordance with API Recommended Practice 2219, "Safe Operations of Vacuum Trucks in Petroleum Service".</b></li> <li>• Bond and ground vacuum truck hoses/truck especially when conveying flammable/combustible materials to prevent static electricity discharges/sparks.</li> <li>• Keep hands and feet from vacuum hose inlet.</li> <li>• Do not place vacuum hose inlet in a position that may inadvertently contact other workers in the area.</li> <li>• Locate vacuum truck upwind of tank with discharge hose downwind of truck and tank.</li> <li>• Keep vacuum truck operations area free from flammable vapors.</li> <li>• Perform LEL monitoring at vacuum truck drive motor during free product removal and shutdown vacuum truck operations with 10% LEL reading in the immediate area.</li> <li>• Wear protective gloves and hearing protection in the immediate vicinity.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Noise	<ul style="list-style-type: none"> <li>• Personnel exposed to loud working environments shall wear hearing protection.</li> <li>• Wear hearing protection in open cabs of heavy equipment or when working adjacent to operating heavy equipment.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>• Be aware of poor footing, potential slipping/tripping hazards in the work area, unprotected holes, ditches, rip rap, utilities, ground protrusions. Observe and avoid areas of unprotected holes, ramps and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Use sturdy hard toe work boots with sufficient ankle support..</li> <li>• Institute and maintain good housekeeping practices. Clean Work Areas as activities proceed. Clear/removed materials and debris from pathways and commonly traveled areas as soon as possible.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Visible Lighting	<ul style="list-style-type: none"> <li>• Perform tasks in daylight hours whenever possible. If dawn, dusk or dark work is to be performed portable lighting must be provided to sufficient illuminate work area(s)..</li> <li>• Only use intrinsically safe lighting in potentially hazardous atmospheres (explosive conditions).</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Manual Lifting	<ul style="list-style-type: none"> <li>• AGVIQ-CH2MHILL or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities.</li> <li>• When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. Use heavy equipment to transfer heavy or awkward loads wherever possible. Have someone assist with the lift— especially for heavy (&gt; 50lbs.) or awkward loads. Do not attempt to manually lift objects that should otherwise be lifted with heavy equipment.</li> <li>• Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift.</li> <li>▪ Avoid carrying heavy objects above shoulder level.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Pre-Demolition Removal of Oil & Hazardous Materials (OHM) from UST System**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Pre-Demolition Removal of OHM from UST System (Cont.)	Fire Prevention	<ul style="list-style-type: none"> <li>▪ Use only metal safety cans for storage and transfer of fuel.</li> <li>▪ Use funnels and nozzles during fueling operations.</li> <li>▪ Appropriately sized, easily accessible ABC fire extinguisher in work area.</li> <li>▪ Review and be cognizant of applicable NAS Brunswick Fire Prevention Procedures and Requirements. Secure any applicable NAS Brunswick Hot Work permit from NAS Brunswick Fire Department representatives and institute fire watch provisions.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Electric Safety/Overhead Utilities	<ul style="list-style-type: none"> <li>• Maintain proper separation between Power Transmission Lines and over overhead utilities. See Electric Safety section in HSP for references to proper separation between operating equipment and power transmission lines/overhead utilities.</li> <li>• Do not swing excavator boom or other components of operating heavy equipment toward overhead utilities. Be cognizant of utility pole guy wires.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Hazardous Energy	<ul style="list-style-type: none"> <li>• Conduct work area survey of any high voltage electric equipment in structures \ as related to designated sample areas. If designated sample locations are sufficiently close to energized equipment try to relocate the location.</li> <li>• Prior to OHM removal review process systems, ensure systems are deenergized via the LOTO process. Review and execute SOP # 310 Lockout and Tagout when it is determined that control of hazardous energy is required</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Biological	<ul style="list-style-type: none"> <li>• Observe ground surfaces, building structure, surrounding vegetation other site features for presence of spiders, bee/wasp hives etc.</li> <li>• Observe areas for presence of stinging insects. Prior to starting field activities, <b>notify supervisors of known allergies to stinging insects and location of antidotes.</b></li> <li>• Use insect repellent or permethrin (clothes). Tape pant legs to boots and ensure there are no open seams between boots and pant legs. Frequently check body and clothing for ticks, spiders. Where tick exposure is moderate or high exposure, the use of disposable coveralls shall be considered. f there is potential for tick or chigger infestation at the site, personnel shall wear "bug-out" suits or disposable tyvek suits to minimize potential exposures to ticks or other biting insects (i.e., chiggers) in combination with permethrin applied to outer clothing layer (only) or dedicated permethrin impregnated clothing.</li> </ul> <p>Avoid exposure to blood borne pathogens. Use universal precautions against exposure.</p>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Pre-Demolition Removal of Oil & Hazardous Materials (OHM) from UST System**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Pre-Demolition Removal of OHM from UST System (Cont.)	Vehicular traffic & Haul trucks	<ul style="list-style-type: none"> <li>• Shut off and secure site vehicles prior to exiting them. Park on level ground where possible. If parking on an incline, engage parking brake. If the vehicle has a manual transmission, ensure the transmission is in gear (not neutral) and the parking brake is engaged before exiting the vehicle.</li> <li>• Exercise caution when exiting traveled way or parking along street– avoid sudden stops, use flashers, etc.</li> <li>• All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.</li> <li>• <b>All haul trucks must following the designated Haul Route established for the NAS Brunswick project.</b></li> <li>• Haul truck operators should ensure all persons are clear before operating trucks or equipment. Before moving, operators should sound horn or alarm. All equipment should be equipped with an operational backing alarm.</li> <li>• Haulage trucks or equipment with restricted visibility should be equipped with devices that eliminate blind spots.</li> <li>• Employees should stay off haul roads. When approaching a haul area, employees should make eye contact and communicate their intentions directly with the equipment operator.</li> <li>• Haul roads should be well lit, sufficiently wide (at least 50% of the width of the equipment on both sides of road) and equipped with reflectors to indicate access points.</li> <li>• Haul roads should have adequate right-of-way signs indicating haul directions, where appropriate</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Pre-Demolition Removal of Oil & Hazardous Materials (OHM) from UST System**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Pre-Demolition Removal of OHM from UST System (Cont.)	Spill Prevention	<ul style="list-style-type: none"> <li>• Ensure that spill control and spill clean-up and material to prevent entry into sensitive receptors are on hand prior to the start of work.</li> <li>• Ensure all unnecessary persons are removed from the hazard area. Determine the major components in the waste at the time of the spill.</li> <li>• Put on protective clothing and equipment. (Modified Level D<sub>2</sub> or C.</li> <li>• If a flammable/combustible material is involved, remove all ignition sources, and use spark- and explosion-proof equipment for recovery of material.</li> <li>• Remove all surrounding materials that could be especially reactive with materials in the waste.</li> <li>• If wastes reach a storm or sewer drain, dam the outfall by using sand, earth, sandbags, etc. Pump this material out into a temporary holding tank or drums as soon as possible.</li> <li>• Place all small quantities of recovered liquid wastes (55 gallons or less) and contaminated soil into drums for incineration or removal to an approved disposal site.</li> <li>• Apply appropriate spill control media (e.g. clay, sand, lime, etc.) to absorb discharged liquids.</li> <li>• For large spills, establish diking around leading edge of spill using booms, sand, clay or other appropriate material. If possible, use diaphragm pump to transfer discharged liquid to drums or holding tank.</li> <li>• <b>For addition spill preparedness and prevention measures refer to the Spill Prevention and Countermeasures Control Plan procedures contained with the Environmental Protection Plan component of the Project Work Plan.</b></li> <li>• <b>Understand notification processes in the event a spill occurs.</b></li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Pre-Demolition Removal of Oil & Hazardous Materials (OHM) from UST System**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
	Electric Hazards	<ul style="list-style-type: none"> <li>• Use double insulated or properly grounded electric power-operated tools.</li> <li>• Maintain tools in a safe and good operating condition.</li> <li>• Inspect all extension cords daily for structural integrity, ground continuity, and damaged insulation</li> <li>• Keep all plugs and receptacles out of water/liquids.</li> <li>• Inspect all electrical power circuits prior to commencing work.</li> <li>• If/when electrical extension cords are required to complete work, extension cords must be:               <ul style="list-style-type: none"> <li>- Equipped with third-wire grounding.</li> <li>- Covered, elevated, or protected from damage when passing through work areas.</li> <li>- Protected from pinching if routed through doorways.</li> <li>- Not fastened with staples, hung from nails, or suspended with wire.</li> <li>- Extension cords and electrical power tools, must have ground fault circuit interrupters (GFCIs) installed.</li> <li>- Rated to handle the voltage/amperage of equipment.</li> </ul> </li> <li>• Avoid contact with high voltage cabinets/sub-panels. Protect workers (physical barriers/isolation/deenergizing) from high voltage electric sources from incidental contact/exposure to these sources..</li> <li>• <b>Reconfirm control/isolation/deenergizing of pumps/valves/transfer systems have been executed.</b></li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Pre-Demolition Removal of Oil & Hazardous Materials (OHM) from UST System**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Pre-Demolition Removal of OHM from UST System (Cont.)	High Ambient Temperature	<ul style="list-style-type: none"> <li>• Provide and drink fluids to prevent worker dehydration.</li> <li>• Minimize intake of caffeinated fluids.</li> <li>▪ Institute a proper work-break regiment in a cool area to avoid heat stress symptoms and overexertion.</li> <li>▪ Monitor for signs and symptoms of heat stress (maintain use of buddy system) when the ambient air temperature exceeds 70°F, the relative humidity is high (&gt;50 percent), or when workers exhibit symptoms of heat stress and especially when wearing disposable or other types of coveralls.               <ol style="list-style-type: none"> <li>1) Heat Syncope = Sluggishness or fainting while standing erect or immobile in heat. <i>Treatment = Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.</i></li> <li>2) Heat Rash = Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure. <i>Treatment = Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.</i></li> <li>3) Heat Cramps = Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours. <i>Treatment = Remove to cooler area. Rest lying down. Increase fluid intake.</i></li> <li>4) Heat exhaustion = Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low. <i>Treatment = Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.</i></li> <li>5) Heat Stroke = Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature. <i>Treatment = Cool rapidly by soaking in cool-but not cold-water. Call ambulance, and get medical attention immediately!</i></li> </ol> </li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Low Ambient Temperature	<ul style="list-style-type: none"> <li>• Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather.</li> <li>• Frequent intake of non-caffeinated fluids to maintain body core temperature.</li> <li>• Frequent intake of non- caffeinated to prevent dehydration.</li> <li>• Obtain and review weather forecast – be aware of predicted weather systems.</li> <li>• Observe one (buddy system) another for initial signs of cold-related disorders.</li> <li>• Frequent observance of Wind Chill Chart (HSP) to assist with work warming regiment determination and frostbite avoidance</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *

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**ACTIVITY HAZARD ANALYSIS - Pre-Demolition Removal of Oil & Hazardous Materials (OHM) from UST System**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Pre-Demolition Removal of OHM from UST System (Cont.)	Electric Hazards	<ul style="list-style-type: none"> <li>• Use double insulated or properly grounded electric power-operated tools.</li> <li>• Maintain tools in a safe and good operating condition.</li> <li>• Inspect all extension cords daily for structural integrity, ground continuity, and damaged insulation</li> <li>• Keep all plugs and receptacles out of water/liquids.</li> <li>• Inspect all electrical power circuits prior to commencing work.</li> <li>• If/when electrical extension cords are required to complete work, extension cords must be:               <ul style="list-style-type: none"> <li>- Equipped with third-wire grounding.</li> <li>- Covered, elevated, or protected from damage when passing through work areas.</li> <li>- Protected from pinching if routed through doorways.</li> <li>- Not fastened with staples, hung from nails, or suspended with wire.</li> <li>- Extension cords and electrical power tools, must have ground fault circuit interrupters (GFCIs) installed.</li> <li>- Rated to handle the voltage/amperage of equipment.</li> </ul> </li> <li>• Avoid contact with high voltage cabinets/sub-panels. Protect workers (physical barriers/isolation/deenergizing) from high voltage electric sources from incidental contact/exposure to these sources..</li> <li>• <b>Reconfirm control/isolation/deenergizing of pumps/valves/transfer systems have been executed.</b></li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Pressure Washing	<ul style="list-style-type: none"> <li>• Only trained, authorized personnel may operate the pressure washer.</li> <li>• Follow manufacturer's safety and operating instructions.</li> <li>• Inspect pressure washer before use and confirm a power shut-off or emergency stop switch is fully operational.</li> <li>• The wand must always be pointed at the work area only.</li> <li>• The trigger should never be tied down in the open position.</li> <li>• Never point the wand at yourself or another worker.</li> <li>• The wand must be at least 42 inches from the trigger to the tip.</li> <li>• The operator must maintain good footing.</li> <li>• Non-operators must remain a safe distance from the operator.</li> <li>• No unauthorized attachment may be made to the unit.</li> <li>• Do not modify the wand.</li> <li>• All leaks or malfunctioning equipment must be repaired immediately or the unit taken out-of-service.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *

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**ACTIVITY HAZARD ANALYSIS - Pre-Demolition Removal of Oil & Hazardous Materials (OHM) from UST System**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Pre-Demolition Removal of OHM from UST System (Cont.)	Pressure Vessels & Compressed Gas	<ul style="list-style-type: none"> <li>• Operate and maintain pressure vessels, pumps and hosing in accordance with the manufacturer's recommendations.</li> <li>• Do not exceed the rated pressure of the vessels and hosing of the system.</li> <li>• The system must be provided with a pressure relief valve/controller that safely reduces the system pressure to within the system rated pressure.</li> <li>• The pressure relief valve must be rated at no more than 110% the rated pressure of the system and must be tested at regular intervals.</li> <li>• Each vessel must be equipped with a functioning pressure gauge to monitor pressure.</li> <li>• Valve caps must be in place when cylinders are transported, moved, or stored.</li> <li>• Cylinder valves must be closed when cylinders are not being used and when cylinders are being moved.</li> <li>• Cylinders must be secured in an upright position at all times.</li> <li>• Cylinders must be shielded from welding and cutting operations and positioned to avoid being struck or knocked over; contacting electrical circuits; or exposed to extreme heat sources.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Stuck by/Pinched Caught in Between	<ul style="list-style-type: none"> <li>• Sufficient separation between ground support personnel and the operating heavy equipment must be maintained.</li> <li>• Wear reflective vests or high visibility clothing to promote visibility of ground personnel by equipment operators.</li> <li>• Isolate equipment swing areas from workers, fixed objects or other equipment. Ground personnel shall avoid positioning themselves between fixed objects, operating equipment. Make/maintain eye contact with operators before approaching equipment. Do not approach equipment from rear or from blind spot of operator. Stay out of the swing radius of operating heavy equipment.</li> <li>• Understand and review hand signals. Designate one person to provide hand signals to equipment operators performing lifting/hoisting operations.</li> <li>• Ensure equipment has operable back-up alarms.</li> <li>• Step away from heavy equipment when adjustments (positioning) are made.</li> <li>• Ensure heavy equipment operator has spotter for obstructed views and backing up.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Pre-Demolition Removal of Oil & Hazardous Materials (OHM) from UST System**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Pre-Demolition Removal of OHM from UST System (Cont.)	Other	<ul style="list-style-type: none"> <li>▪ Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>▪ Shut down operations in heavy rain and lightning. Seek safe haven in a grounded structure or vehicle. Implement 30 - 30 rule.</li> <li>▪ Buddy System maintained for all phases of work.</li> <li>▪ Base or Local Emergency medical Service and Fire Dispatch numbers programmed into cellular phones. Have hospital route maps readily available.</li> <li>▪ Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.</li> </ul>	NA
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> <li>• Fire extinguisher (with fuel and electrical sources)</li> <li>• Eye wash (small portable type)</li> <li>• Miscellaneous power and manual hand tools.</li> <li>• First Aid/BbPK/CPR shield</li> <li>• Excavator, loader, skid steer loader, Vacuum trucks</li> </ul>		<ul style="list-style-type: none"> <li>• Visual Inspections of designated work areas identify and address hazardous conditions.</li> <li>• Equipment inspections and maintenance.</li> <li>• Inspections of hand tools (power) and extension chords if used.</li> </ul>	<ul style="list-style-type: none"> <li>• Review AHA with all task personnel</li> <li>• Review Site Specific Health and Safety Plan for new site personnel.</li> <li>• Review operations/safety manuals for all equipment utilized.</li> <li>• Power tool and heavy equipment operators qualified by previous training or experience.</li> <li>• 29CFR1910.178 for forklift operators</li> <li>• Supervisors, SSHO - 1<sup>st</sup> Aid/CPR (two people on-site)</li> <li>• Supervisors, SSHO - BBLPS, SC-HW (29CFR1910.120(e)(4) or equivalent, SCC (10 hr Construction Safety)</li> <li>• All - Training and medical surveillance in accordance 29CFR1910.120 (HAZWOPER) or 29CFR1910.134 (respiratory, as necessary)</li> </ul>

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SIGNATURE

Supervisor Name:

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Date/Time: \_\_\_\_\_

Safety Officer Name:

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Date/Time: \_\_\_\_\_

Site Personnel:

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Date/Time: \_\_\_\_\_

AHA Prepared By: Mark Orman



**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS - Demolition of the Fuel Island, Piping & UST Removal**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Demolition of Fuel Island Piping and UST Removal	Demolition Planning/ Compliance	<ul style="list-style-type: none"> <li>Secure any local or state government demolition permits that may be required prior to beginning demolition and tank removal operations. This may require the inclusion of a structural engineer and be a requirement for C&amp;D disposal options. Verify local/state notification/approval requirements and secure necessary approvals before initiating work.</li> <li>All electric, gas, water, steam, sewer, and other service lines shall be shut off, capped, or otherwise controlled outside the building line before demolition work is started. Any utility company involved shall be notified in advance. If it is necessary to maintain any power, water, or other utilities during demolition, such lines shall be temporarily relocated, as necessary, and protected.</li> <li>Verify Dig Safe dig excavation clearance notifications remain valid. Update notifications as may be required by Dig Safe requirements.</li> </ul>	<p>Standard Level D PPE or as required by HSP *</p> <p>* Work clothes, reflective vests/ high visibility clothing, hard hat, safety glasses and sturdy hard toed work boots, hand, hearing and face protection, as dictated by task.</p>
	Chemical Exposure or Environmental Releases	<ul style="list-style-type: none"> <li>Verify that Oil and Hazardous Materials (OHM) have been removed from the structure / Tank before initialing any structure demolition or removal operations.</li> <li>Tanks, containers, piping or ducts that held or is contaminated with hazardous substances should be characterized (see HSE&amp;Q SOP # 413, Waste Management Planning), marked accordingly with non-toxic paint or markers (e.g., color coding) and removed prior to demolition. Waste streams must be segregated and managed in accordance with SOP HSE&amp;Q SOP# 408, Waste Characterization, Sampling, and Analysis), HSE&amp;Q SOP 409, Hazardous Waste Management) or HSE&amp;Q SOP# 411, Non-Hazardous Waste Management.</li> <li>Fugitive dust must be controlled during demolition by using water sprays or other methods.</li> <li>Proper control measures shall be in place before welding or cutting on surfaces covered by coatings containing flammable or hazardous materials such as lead, cadmium, zinc, etc. Highly flammable or toxic coatings may require stripping of the coating a sufficient distance from the area to be heated.</li> </ul>	<p>Standard Level D PPE or as required by HSP *</p>
	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet/steep slopes, stumps/roots, unprotected holes, ditches, rip rap, utilities, ground protrusions. Observe and avoid areas of unprotected holes, ramps and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Use sturdy hard toe work boots with sufficient ankle support.</li> <li>Institute and maintain good housekeeping practices. Clean Work Areas as activities proceed. Clear/removed materials and debris from pathways and commonly traveled areas as soon as possible.</li> <li>Fall protection shall be provided when personnel are exposed to a fall of 6 feet or greater</li> </ul>	<p>Standard Level D PPE or as required by HSP *</p>
	Noise	<ul style="list-style-type: none"> <li>Personnel exposed to loud working environments (demolition operations) shall wear hearing protection.</li> <li>Wear hearing protection in open cabs of heavy equipment or when working adjacent to operating heavy equipment.</li> </ul>	<p>Standard Level D PPE or as required by HSP *</p>

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Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
	Visible Lighting	<ul style="list-style-type: none"> <li>• Perform tasks in daylight hours whenever possible. If dawn, dusk or dark work is to be performed portable lighting must be provided to sufficient illuminate work area(s).</li> </ul>	Standard Level D PPE or as required by HSP *
Demolition of Fuel Island Piping and UST Removal (cont.)	Spill Prevention	<ul style="list-style-type: none"> <li>• Ensure that spill control and spill clean-up and material to prevent entry into sensitive receptors are on hand prior to the start of work.</li> <li>• Ensure all unnecessary persons are removed from the hazard area. Determine the major components in the waste at the time of the spill.</li> <li>• Put on protective clothing and equipment. (Modified Level D<sub>2</sub> or C).</li> <li>• If a flammable/combustible material is involved, remove all ignition sources, and use spark- and explosion-proof equipment for recovery of material.</li> <li>• Remove all surrounding materials that could be especially reactive with materials in the waste.</li> <li>• If wastes reach a storm or sewer drain, dam the outfall by using sand, earth, sandbags, etc. Pump this material out into a temporary holding tank or drums as soon as possible.</li> <li>• Place all small quantities of recovered liquid wastes (55 gallons or less) and contaminated soil into drums for removal to an approved disposal site.</li> <li>• Apply appropriate spill control media (e.g. clay, sand, lime, etc.) to absorb discharged liquids.</li> <li>• For large spills, establish diking around leading edge of spill using booms, sand, clay or other appropriate material. If possible, use diaphragm pump to transfer discharged liquid to drums or holding tank.</li> <li>• <b>For addition spill preparedness and prevention measures refer to the Spill Prevention and Countermeasures Control Plan procedures contained with the Environmental Protection Plan component of the Project Work Plan.</b></li> <li>• <b>Understand notification processes in the event a spill occurs..</b></li> </ul>	Standard Level D PPE or as required by HSP *
	Site control	<ul style="list-style-type: none"> <li>• Personnel shall not enter the demolition zone unless completely necessary, and only after the competent person has assessed the condition of the structure and has authorized entry.</li> <li>• Personnel shall be aware of and follow all requirements established by the competent person. The competent person shall inform personnel of the areas that are safe to enter and the areas where entry is prohibited. The competent person shall escort CH2M HILL personnel while in the demolition zone.</li> <li>• The competent person shall control entry into the demolition zone. Unauthorized entry shall be prohibited.</li> <li>• Appropriate warning and instructional safety signs shall be conspicuously posted where necessary. In addition, a signalman shall control the movement of motorized equipment in areas where the public might be endangered.</li> </ul>	Standard Level D PPE or as required by HSP *

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Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Demolition of Fuel Island Piping and UST Removal (cont.)	Cave Ins/ Engulfment	<ul style="list-style-type: none"> <li>- Each employee in an excavation must be protected from cave-ins by adequate protective systems designed in accordance with applicable OSHA standards (i.e. Design of Sloping and Benching Systems and Design of Support Systems, Shield Systems and other Protective Systems) except when;               <ul style="list-style-type: none"> <li>1) Excavations are made entirely in rock;</li> <li>2) Excavations are less than 5 feet (1.52m) in depth and examination of the ground by a competent person provides there is no indication of cave-in.</li> </ul> </li> <li>- Sloping and benching configurations shall be in accordance with 29 CFR 1926.652(b) or EM 385 1-1, section 25.C, which ever is more stringent.</li> <li>- Where the use of support systems, shields or other protective systems is determined to be necessary, the design of said systems shall be in accordance with 29CFR1926.652(c) or shall be in EM 385 1-1, section 25.C, which ever is more stringent.</li> <li>- Special Excavation Requirements defined by 29CFR1926.651 shall also be evaluated prior to the start of site excavation activities.</li> <li>- AGVIG /CH2M HILL personnel must notify and be granted authorization from the excavation-competent person prior to entering any excavation. AGVIG/CH2M HILL personnel must follow all excavation requirements established by the competent person. A competent person is an individual who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees and, who has authority to take prompt corrective measures to eliminate them. The competent person must be a person designated by the AGVIC/CH2M HILL.               <ul style="list-style-type: none"> <li>• The competent person must inspect the excavation every day and after everyday hazard increasing event. Documentation of this inspection must be maintained on site at all times.</li> <li>• AGVIG /CH2M HILL personnel must not enter any excavation where protective systems are deficient at any time, for any reason. The competent person must be notified of such conditions</li> <li>• Provide Excavation Perimeter Protection and Warning signs as necessary to be in compliance with EM 385 11-1, Section 25B Safe Access and Appendix Q, "Perimeter Protection".</li> </ul> </li> </ul>	Standard Level D PPE or as required by HSP *
	Heavy Equipment	<ul style="list-style-type: none"> <li>• Only appropriately sized heavy equipment shall be used in demolition operations and shall be affixed with suitable material handling/demolition attachments.</li> <li>• Seat belts or other restraint system shall be used by heavy equipment operators.</li> <li>• Demolition equipment shall be inspected each day, before use, to ensure safe operational condition. Keep documentation on site.</li> <li>• Use caution around pressurized lines/hoses. Inspect hoses daily for cuts, abrasions and wear.</li> <li>• Equipment shall only be operated by personnel qualified by prior training or experience.</li> <li>• Ensure that a stable ground surface is available for the operation of heavy equipment.</li> <li>• Do not swing overhead loads over ground personnel.</li> </ul>	Standard Level D PPE or as required by HSP *

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ACTIVITY HAZARD ANALYSIS - Demolition of the Fuel Island, Piping & UST Removal**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Demolition of Fuel Island Piping and UST Removal (cont.)	Hazardous Energy	<ul style="list-style-type: none"> <li>• Conduct work area survey of any high voltage electric equipment in structures \ as related to designated sample areas. If designated sample locations are sufficiently close to energized equipment try to relocate the location.</li> <li>• Prior to OHM removal review process systems, ensure systems are de-energized via the LOTO process. Review and execute SOP # 310 Lockout and Tagout when it is determined that control of hazardous energy is required</li> </ul>	Standard Level D PPE or as required by HSP *
	Material Handling	<ul style="list-style-type: none"> <li>• Suspended loads will not pass over workers at any time. Site personnel are prohibited from passing under suspended loads.</li> <li>• Rigging use, maintenance and inspection shall be performed in accordance with the applicable standards of 29CFR1926.250 and Army Corps of Engineers Manual EM 385 1-1, section 15, Rigging, which ever is more stringent.</li> <li>▪ Only load rated (tagged or labeled) rigging shall be utilized on AGVIG /CH2M HILL projects. User shall familiarize themselves with design load rate capacities (i.e. vertical, basket/cradle or choker applications) for the selected rigging.</li> <li>• When a telescopic material handler is used to manage removed materials ;               <ul style="list-style-type: none"> <li>- Verify weight of the item to be lifted</li> <li>- Compare weight to boom extension length and angle/height to verify that the lift is not in excess of the material handlers lifting capabilities.</li> <li>- Control material handlers operating envelop to eliminate the potential for unauthorized/unnecessary personnel into the work area.</li> <li>- For large, awkward or heavy items Lift item a few inches to confirm material stability/ lift capabilities of material handler.</li> <li>- Ensure that the material handler is operating from a firm, level, competent ground surface.</li> </ul> </li> <li>• Personnel operating forklifts/material handlers shall be qualified by training/experience and meet training/evaluation requirements of 29CFR1910.178.</li> </ul>	Standard Level D PPE or as required by HSP *
	Fire Prevention	<ul style="list-style-type: none"> <li>▪ Use only metal safety cans for storage and transfer of fuel.</li> <li>▪ Use funnels and nozzles during fueling operations.</li> <li>▪ Appropriately sized, easily accessible ABC fire extinguisher in work area.</li> <li>▪ Review and be cognizant of applicable NAS Brunswick Fire Prevention Procedures and Requirements. Secure any applicable NAS Brunswick Hot Work permit from NAS Brunswick Fire Department representatives and institute fire watch provisions.</li> <li>▪ Hoses associated with cutting operations must be protected from damage from flames or cutting slag and such that ignition/explosion may not occur.</li> </ul>	Standard Level D PPE or as required by HSP *

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Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Demolition of Fuel Island Piping and UST Removal (cont.)	Biological	<ul style="list-style-type: none"> <li>• Observe ground surfaces, building structure, surrounding vegetation other site features for presence of spiders, bee/wasp hives etc.</li> <li>• Observe areas for presence of stinging insects. Prior to starting field activities, <b>notify supervisors of known allergies to stinging insects and location of antidotes.</b></li> <li>• Use insect repellent or permethrin (clothes). Tape pant legs to boots and ensure there are no open seams between boots and pant legs. Frequently check body and clothing for ticks, spiders. Where tick exposure is moderate or high exposure, the use of disposable coveralls shall be considered. If there is potential for tick or chigger infestation at the site, personnel shall wear "bug-out" suits or disposable tyvek suits to minimize potential exposures to ticks or other biting insects (i.e., chiggers) in combination with permethrin applied to outer clothing layer (only) or dedicated permethrin impregnated clothing.</li> </ul> <p>Avoid exposure to blood borne pathogens. Use universal precautions against exposure.</p>	Standard Level D PPE or as required by HSP *
	Stuck by/Pinched Caught in Between	<ul style="list-style-type: none"> <li>• Personnel shall remain a safe distance from the demolition zone to reduce exposure to fragmentation of glass, steel, masonry, and other debris during demolition operations.</li> <li>• Demolition of exterior walls and floors shall begin at the top of the structure and proceed downward, except for the cutting of holes in floors for chutes, holes through which to drop materials, preparation of storage space, and similar necessary preparatory work. Each story of exterior wall and floor construction shall be removed and dropped into the storage space before commencing removal of the story below.</li> <li>• Glass should be removed from the structure prior to demolition. If glass is not removed, personnel shall be protected from flying glass fragments by being under cover, remaining a safe distance away, or similar protective action.</li> <li>• Sufficient separation between ground support personnel and the operating heavy equipment must be maintained.</li> <li>• Wear reflective vests or high visibility clothing to promote visibility of ground personnel by equipment operators.</li> <li>• Isolate equipment swing areas from workers, fixed objects or other equipment. Ground personnel shall avoid positioning themselves between fixed objects, operating equipment. Make/maintain eye contact with operators before approaching equipment. Do not approach equipment from rear or from blind spot of operator. Stay out of the swing radius of operating heavy equipment.</li> <li>• Understand and review hand signals. Designate one person to provide hand signals to equipment operators performing lifting/hoisting operations.</li> <li>• Ensure equipment has operable back-up alarms.</li> <li>• Step away from heavy equipment when adjustments (positioning) are made.</li> <li>• Ensure heavy equipment operator has spotter for obstructed views and backing up.</li> </ul>	Standard Level D PPE or as required by HSP *

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Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Demolition of Fuel Island Piping and UST Removal (cont.)	Electric Safety/Overhead Utilities	<ul style="list-style-type: none"> <li>• Maintain proper separation between Power Transmission Lines and over overhead utilities. See Electric Safety section in HSP for references to proper separation between operating equipment and power transmission lines/overhead utilities.</li> <li>• Do not swing excavator boom or other components of operating heavy equipment toward overhead utilities. Be cognizant of utility pole guy wires.</li> </ul>	Standard Level D PPE or as required by HSP *
	Cutting	<ul style="list-style-type: none"> <li>• Proper control measures shall be in place before welding or cutting on surfaces covered by coatings containing flammable or hazardous materials such as lead, cadmium, zinc, etc. Highly flammable or toxic coatings may require stripping of the coating a sufficient distance from the area to be heated. <ul style="list-style-type: none"> <li>▪ Appropriately sized, easily accessible ABC fire extinguisher in all work areas or heavy equipment.</li> </ul> </li> <li>• Review and be cognizant of any specific NAS Brunswick Fire Prevention Procedures and Requirements prior to performing any hot work activities (hot cutting, welding, grinding).</li> <li>• Prior to performing any cutting operations, evaluate if there is any potential for presence or build-up of hazardous atmosphere conditions that would require the use of a multi-gas meter (LEL, O2, H2S, CO) to verify there are no potentially explosive conditions or hazardous atmospheres in the work area. If the potential exists, verify atmospheric conditions of the work area and document readings. Perform periodic checks of the work area for the duration of the welding and cutting procedure.</li> <li>• During welding or cutting activities, use protective eye wear which meets the shading requirements where light emitting energy is generated. Use face protection, as necessary to mitigate cut/abrasions/injuries to the face that may be associated with the selected cutting method.</li> <li>• Compressed gas cylinder valve caps must be in place when cylinders are transported, moved, or stored.</li> <li>• Compressed gas cylinder valves must be closed when cylinders are not being used and when cylinders are being moved.</li> <li>• Compressed gas cylinder cylinders must be secured in an upright position at all times.</li> <li>• Compressed gas cylinder cylinders must be shielded from welding and cutting operations and positioned to avoid being struck or knocked over; contacting electrical circuits; or exposed to extreme heat sources.</li> </ul>	Standard Level D PPE or as required by HSP *
	Material Handling	<ul style="list-style-type: none"> <li>• Suspended loads will not pass over workers at any time. Site personnel are prohibited from passing under suspended loads.</li> <li>• Rigging use, maintenance and inspection shall be performed in accordance with the applicable standards of 29CFR1926.250 and Army Corps of Engineers Manual EM 385 1-1, section 15, Rigging, which ever is more stringent.</li> <li>• Only load rated (tagged or labeled) rigging shall be utilized on AGVIG /CH2M HILL projects. User shall familiarize themselves with design load rate capacities (i.e. vertical, basket/cradle or choker applications) for the selected rigging.</li> </ul>	Standard Level D PPE or as required by HSP *

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Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Demolition of Fuel Island Piping and UST Removal (cont.)	High Ambient Temperature	<ul style="list-style-type: none"> <li>• Provide and drink fluids to prevent worker dehydration.</li> <li>• Minimize intake of caffeinated fluids.</li> <li>▪ Institute a proper work-break regiment in a cool area to avoid heat stress symptoms and overexertion.</li> <li>▪ Monitor for signs and symptoms of heat stress (maintain use of buddy system) when the ambient air temperature exceeds 70°F, the relative humidity is high (&gt;50 percent), or when workers exhibit symptoms of heat stress and especially when wearing disposable or other types of coveralls.               <ol style="list-style-type: none"> <li>1) Heat Syncope = Sluggishness or fainting while standing erect or immobile in heat. <i>Treatment = Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.</i></li> <li>2) Heat Rash = Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure. <i>Treatment = Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.</i></li> <li>3) Heat Cramps = Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours. <i>Treatment = Remove to cooler area. Rest lying down. Increase fluid intake.</i></li> <li>4) Heat exhaustion = Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low. <i>Treatment = Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.</i></li> <li>5) Heat Stroke = Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature. <i>Treatment = Cool rapidly by soaking in cool-but not cold-water. Call ambulance, and get medical attention immediately!</i></li> </ol> </li> </ul>	Standard Level D PPE or as required by HSP *
	Low Ambient Temperature	<ul style="list-style-type: none"> <li>• Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather.</li> <li>• Frequent intake of non-caffeinated fluids to maintain body core temperature.</li> <li>• Frequent intake of non- caffeinated to prevent dehydration.</li> <li>• Obtain and review weather forecast – be aware of predicted weather systems.</li> <li>• Observe one (buddy system) another for initial signs of cold-related disorders.</li> <li>• Frequent observance of Wind Chill Chart (HSP) to assist with work warming regiment determination and frostbite avoidance</li> </ul>	Standard Level D PPE or as required by HSP *

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Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Demolition of Fuel Island Piping and UST Removal (Cont.)	Haul trucks	<ul style="list-style-type: none"> <li>• All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.</li> <li>• <b>All haul trucks must following the designated Haul Route established for the NAS Brunswick project.</b></li> <li>• Haul truck operators should be familiar with their equipment and inspect all equipment before use.</li> <li>• Haul truck operators should ensure all persons are clear before operating trucks or equipment. Before moving, operators should sound horn or alarm. All equipment should be equipped with an operational backing alarm.</li> <li>• Haulage trucks or equipment with restricted visibility should be equipped with devices that eliminate blind spots.</li> <li>• Employees should stay off haul roads. When approaching a haul area, employees should make eye contact and communicate their intentions directly with the equipment operator.</li> <li>• Where grades are steep, provide signs indicating the actual grade as well as measures for a runaway truck..</li> <li>• Haul roads should be well lit, sufficiently wide (at least 50% of the width of the equipment on both sides of road) and equipped with reflectors to indicate access points.</li> <li>▪ Haul roads should have adequate right-of-way signs indicating haul directions, where appropriate</li> </ul>	Standard Level D PPE or as required by HSP *
	Other	<ul style="list-style-type: none"> <li>▪ Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>▪ Shut down operations in heavy rain and lightning. Seek safe haven in a grounded structure or vehicle. Implement 30 - 30 rule.</li> <li>▪ Buddy System maintained for all phases of work.</li> <li>▪ Base or Local Emergency medical Service and Fire Dispatch numbers programmed into cellular phones. Have hospital route maps readily available.</li> <li>▪ Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.</li> </ul>	NA
<b>EQUIPMENT REQUIRED</b>		<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>
<ul style="list-style-type: none"> <li>• Fire extinguisher (with fuel and electrical sources)</li> <li>• Eye wash (small portable type)</li> <li>• Miscellaneous power and manual hand tools.</li> <li>• First Aid/BbPK/CPR shield</li> <li>• Excavator with material handling attachments, Loader</li> </ul>		<ul style="list-style-type: none"> <li>• Visual Inspections of designated work areas identify and address hazardous conditions.</li> <li>• Equipment inspections and maintenance.</li> <li>• Inspections of hand tools (power) and extension chords if used.</li> <li>• Rigging Inspection (if used)</li> </ul>	<ul style="list-style-type: none"> <li>• Review AHA with all task personnel</li> <li>• Review Site Specific Health and Safety Plan for new site personnel.</li> <li>• Power tool and heavy equipment operators qualified by previous training or experience.</li> <li>• 1<sup>st</sup> Aid/CPR (two people on-site)</li> <li>• Supervisors, SSHO - BBLPS, SC-HW (29CFR1910.120(e)(4) or equivalent, SCC (10 hr Construction Safety)</li> <li>• All - Training and medical surveillance in accordance 29CFR1910.120 (HAZWOPER) or 29CFR1910.134</li> </ul>

PRINT

SIGNATURE

Supervisor Name: \_\_\_\_\_

\_\_\_\_\_

Date/Time: \_\_\_\_\_

Safety Officer Name: \_\_\_\_\_

\_\_\_\_\_

Date/Time: \_\_\_\_\_

Site Personnel: \_\_\_\_\_

\_\_\_\_\_

Date/Time: \_\_\_\_\_

AHA Prepared By: Mark Orman



**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Excavation/Management of Contaminated Soil & Confirmation Sampling**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Excavation/ Management of Contaminated Soil & Confirmation Sampling	Chemical Exposure	<ul style="list-style-type: none"> <li>• All personnel performing this task shall be trained in accordance with 29CFR1910.120 and been rolled in a medical monitoring program.</li> <li>• Pregnant or potentially pregnant AGVIQ/CH2M HILL personnel to review Standard of Practice HSE-120, Reproductive Protection before performing any hazardous or potentially hazardous duty.</li> <li>• Do not allow dermal contact or incidental ingestion of impacted soil or groundwater. Skin contact with contaminated water, soils, debris, or equipment shall be avoided at all times. Do not kneel or step in potentially contaminated media (soil or ground water) without first donning proper PPE.</li> <li>• Exercise good hygiene practices. Always wash hands before eating, drinking, smoking and leaving site. Only eat, drink, smoke or chew tobacco in designated areas.</li> <li>• Do not allow on-site haul truck operators to climb into dump bodies without proper PPE.</li> <li>• Adhere to PPE and action monitoring level requirements identified in the sections 5.0 and 6.0 of the site specific HSP.</li> </ul>	<p>Level D<sub>1</sub> or D<sub>2</sub> Modified PPE or as required by HSP*</p> <p>D: Work clothes, reflective vests, hard hat, safety glasses and sturdy hard toed work boots, hearing and hand protection as necessary for task.</p> <p>D<sub>1</sub> : D + hand protection (inner and outer chemical resistant gloves)</p> <p>D<sub>2</sub>: D<sub>1</sub>+ chemical resistant suits and boot covers, face protection (as needed)</p>
	Buried Objects	<ul style="list-style-type: none"> <li>• For in-situ soil pre-characterization sampling activities verify Dig Safe dig excavation clearance notifications remain valid. Update notifications as may be required by Dig Safe requirements.</li> <li>• Where unknown or unanticipated buried objects are encountered AGVIQ/CH2M HILL or subcontractor personnel shall 1) secure equipment to the extent possible, without causing bodily injury, 2) evacuate the work area and 3) immediately notify the site manager, SHSO and PM of the encountered condition. Work may only resume with appropriate documentation/notification that exposure hazards (physical or chemical) do not exist. Consult with AGVIQ/CH2M HILL PM and HSM prior to resuming activities.</li> </ul>	<p>Level D<sub>1</sub> or D<sub>2</sub> Modified PPE or as required by HSP *</p>
	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>• Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet/steep slopes, stumps/roots, unprotected holes, ditches, rip rap, utilities, ground protrusions. Observe and avoid areas of unprotected holes, ramps and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Use sturdy hard toe work boots with sufficient ankle support.</li> <li>• Institute and maintain good housekeeping practices. Clean Work Areas as activities proceed. Clear/removed materials and debris from pathways and commonly traveled areas as soon as possible.</li> <li>• Use a sufficient amount of personnel (3) to cover waste stockpiles, use more as necessary in windy conditions.</li> <li>• Avoid walking on top of waste stockpiles that are covered in polyethylene sheeting or similar materials.</li> </ul>	<p>Level D<sub>1</sub> or D<sub>2</sub> Modified PPE or as required by HSP *</p>

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS - Excavation/Management of Contaminated Soil & Confirmation Sampling**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Excavation/ Management of Contaminated Soil & Confirmation Sampling (Cont.)	Visible Lighting	<ul style="list-style-type: none"> <li>Perform tasks in daylight hours whenever possible. If dawn, dusk or dark work is to be performed portable lighting must be provided to sufficient illuminate work area(s).</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Cave Ins/ Engulfment	<ul style="list-style-type: none"> <li>Each employee in an excavation must be protected from cave-ins by adequate protective systems designed in accordance with applicable OSHA standards (i.e. Design of Sloping and Benching Systems and Design of Support Systems, Shield Systems and other Protective Systems) except when;               <ul style="list-style-type: none"> <li>1)Excavations are made entirely in rock;</li> <li>2) Excavations are less than 5 feet (1.52m) in depth and examination of the ground by a competent person provides there is no indication of cave-in.</li> </ul> </li> <li>Sloping and benching configurations shall be in accordance with 29 CFR 1926.652(b) or EM 385 1-1, section 25.C, which ever is more stringent.</li> <li>Where the use of support systems, shields or other protective systems is determined to be necessary, the design of said systems shall be in accordance with 29CFR1926.652(c) or shall be in EM 385 1-1, section 25.C, which ever is more stringent.</li> <li>Special Excavation Requirements defined by 29CFR1926.651 shall also be evaluated prior to the start of site excavation activities.</li> <li>AGVIQ/CH2M HILL personnel must notify and be granted authorization from the excavation-competent person prior to entering any excavation. AGVIQ/CH2M HILL personnel must follow all excavation requirements established by the competent person. A competent person is an individual who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees and, who has authority to take prompt corrective measures to eliminate them. The competent person must be a person designated by the AGVIQ/CH2M HILL.</li> <li>The competent person must inspect the excavation every day and after everyday hazard increasing event. Documentation of this inspection must be maintained on site at all times.</li> <li>AGVIQ/CH2M HILL personnel must not enter any excavation where protective systems are deficient at any time, for any reason. The competent person must be notified of such conditions</li> <li>Provide Excavation Perimeter Protection and Warning signs as necessary to be in compliance with EM 385 11-1, Section 25B Safe Access and Appendix Q, "Perimeter Protection".</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Noise	<ul style="list-style-type: none"> <li>Personnel exposed to loud working environments shall wear hearing protection.</li> <li>Wear hearing protection in open cabs of heavy equipment or when working adjacent to operating heavy equipment.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Excavation/Management of Contaminated Soil & Confirmation Sampling**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Excavation/ Management of Contaminated Soil & Confirmation Sampling (Cont.)	Fire Prevention	<ul style="list-style-type: none"> <li>▪ Use only metal safety cans for storage and transfer of fuel.</li> <li>▪ Use funnels and nozzles during fueling operations.</li> <li>▪ Appropriately sized, easily accessible ABC fire extinguisher in work area.</li> <li>▪ Review and be cognizant of applicable NAS Brunswick Fire Prevention Procedures and Requirements. Secure any applicable NWIRP Calverton Hot Work permit from NAS Brunswick Fire Department representatives and institute fire watch provisions.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Heavy Equipment	<ul style="list-style-type: none"> <li>• Seat belts or other restraint system shall be used by heavy equipment operators.</li> <li>• Perform daily maintenance and inspections on operating equipment. Keep documentation on site.</li> <li>• Use caution around pressurized lines/hoses. Inspect hoses daily for cuts, abrasions and wear.</li> <li>• Equipment shall only be operated by personnel qualified by prior training or experience.</li> <li>• Ensure that a stable ground surface is available for the operation of heavy equipment.</li> <li>• Do not swing overhead loads over ground personnel.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Biological	<ul style="list-style-type: none"> <li>• Observe ground surfaces, building structure, surrounding vegetation other site features for presence of spiders, bee/ wasp hives etc.</li> <li>• Observe areas for presence of stinging insects. Prior to starting field activities, <b>notify supervisors of known allergies to stinging insects and location of antidotes.</b></li> <li>• Use insect repellent or permethrin (clothes). Tape pant legs to boots and ensure there are no open seams between boots and pant legs. Frequently check body and clothing for ticks, spiders. Where tick exposure is moderate or high exposure, the use of disposable coveralls shall be considered. If there is potential for tick or chigger infestation at the site, personnel shall wear “bug-out” suits or disposable tyvek suits to minimize potential exposures to ticks or other biting insects (i.e., chiggers) in combination with permethrin applied to outer clothing layer (only) or dedicated permethrin impregnated clothing.</li> </ul> <p>Avoid exposure to blood borne pathogens. Use universal precautions against exposure.</p>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Excavation/Management of Contaminated Soil & Confirmation Sampling**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Excavation/ Management of Contaminated Soil & Confirmation Sampling (Cont.)	Vehicular traffic & Haul trucks	<ul style="list-style-type: none"> <li>• Shut off and secure site vehicles prior to exiting them. Park on level ground where possible. If parking on an incline, engage parking brake. If the vehicle has a manual transmission, ensure the transmission is in gear (not neutral) and the parking brake is engaged before exiting the vehicle.</li> <li>• Exercise caution when exiting traveled way or parking along street— avoid sudden stops, use flashers, etc.</li> <li>• Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier.</li> <li>• All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.</li> <li>• <b>All haul trucks must following the designated Haul Route established for the NAS Brunswick project.</b></li> <li>• Haul truck operators should be familiar with their equipment and inspect all equipment before use.</li> <li>• Haul truck operators should ensure all persons are clear before operating trucks or equipment. Before moving, operators should sound horn or alarm. All equipment should be equipped with an operational backing alarm.</li> <li>• Haulage trucks or equipment with restricted visibility should be equipped with devices that eliminate blind spots.</li> <li>• Employees should stay off haul roads. When approaching a haul area, employees should make eye contact and communicate their intentions directly with the equipment operator.</li> <li>• Where grades are steep, provide signs indicating the actual grade as well as measures for a runaway truck..</li> <li>• Haul roads should be well lit, sufficiently wide (at least 50% of the width of the equipment on both sides of road) and equipped with reflectors to indicate access points.</li> <li>• Haul roads should have adequate right-of-way signs indicating haul directions, where appropriate</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Manual Lifting	<ul style="list-style-type: none"> <li>• AGVIQ/CH2M HILL or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities.</li> <li>• When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. Use heavy equipment to transfer heavy or awkward loads wherever possible. Have someone assist with the lift— especially for heavy (&gt; 40lbs.) or awkward loads. Do not attempt to manually lift objects that should otherwise be lifted with heavy equipment.</li> <li>• Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift.</li> <li>▪ Avoid carrying heavy objects above shoulder level.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Excavation/Management of Contaminated Soil & Confirmation Sampling**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Excavation/ Management of Contaminated Soil & Confirmation Sampling (Cont.)	Dewatering	<ul style="list-style-type: none"> <li>• Use chemical/liquid resistant gloves and face shield (as necessary) when handling contaminated liquids. See section 5.0 of site specific HSP.</li> <li>• All pressured lines and fittings should be ‘tethered’ or otherwise secured to minimize whipping or ‘launching’ of lines in the event of a failure. Any ‘quick connect’ type fittings should be secured with appropriate pins, clips or covering to prevent accidental disengagement of the fitting.</li> <li>• Ensure all pressure is removed from discharge hoses before disconnecting hose sections.</li> <li>• Inspect all equipment, hoses, pressure lines and fittings daily and prior to pressurizing.</li> <li>• If a flammable/combustible material is involved, remove all ignition sources, and use spark- and explosion-proof equipment for recovery of material.</li> <li>• Dewatering operations are to be reviewed/monitored by the Excavation Competent Person.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Manual Lifting	<ul style="list-style-type: none"> <li>• AGVIQ/CH2M HILL or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities.</li> <li>• When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. Use heavy equipment to transfer heavy or awkward loads wherever possible. Have someone assist with the lift – especially for heavy (&gt; 50lbs.) or awkward loads. Do not attempt to manually lift objects that should otherwise be lifted with heavy equipment.</li> <li>• Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift.</li> <li>▪ Avoid carrying heavy objects above shoulder level.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Excavation/Management of Contaminated Soil & Confirmation Sampling**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Excavation/ Management of Contaminated Soil & Confirmation Sampling (Cont.)	High Ambient Temperature	<ul style="list-style-type: none"> <li>• Provide and drink fluids to prevent worker dehydration.</li> <li>• Minimize intake of caffeinated fluids.</li> <li>▪ Institute a proper work-break regiment in a cool area to avoid heat stress symptoms and overexertion.</li> <li>▪ Monitor for signs and symptoms of heat stress (maintain use of buddy system) when the ambient air temperature exceeds 70°F, the relative humidity is high (&gt;50 percent), or when workers exhibit symptoms of heat stress and especially when wearing disposable or other types of coveralls.               <ol style="list-style-type: none"> <li>1) Heat Syncope = Sluggishness or fainting while standing erect or immobile in heat. <i>Treatment = Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.</i></li> <li>2) Heat Rash = Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure. <i>Treatment = Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.</i></li> <li>3) Heat Cramps = Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours. <i>Treatment = Remove to cooler area. Rest lying down. Increase fluid intake.</i></li> <li>4) Heat exhaustion = Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low. <i>Treatment = Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.</i></li> <li>5) Heat Stroke = Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature. <i>Treatment = Cool rapidly by soaking in cool-but not cold-water. Call ambulance, and get medical attention immediately!</i></li> </ol> </li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Low Ambient Temperature	<ul style="list-style-type: none"> <li>• Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather.</li> <li>• Frequent intake of non-caffeinated fluids to maintain body core temperature.</li> <li>• Frequent intake of non- caffeinated to prevent dehydration.</li> <li>• Obtain and review weather forecast – be aware of predicted weather systems.</li> <li>• Observe one (buddy system) another for initial signs of cold-related disorders.</li> <li>• Frequent observance of Wind Chill Chart (HSP) to assist with work warming regiment determination and frostbite avoidance</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Excavation/Management of Contaminated Soil & Confirmation Sampling**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Excavation/ Management of Contaminated Soil & Confirmation Sampling (Cont.)	Stuck by/Pinched Caught in Between	<ul style="list-style-type: none"> <li>• Sufficient separation between ground support personnel and the operating heavy equipment must be maintained.</li> <li>• Wear reflective vests or high visibility clothing to promote visibility of ground personnel by equipment operators.</li> <li>• Isolate equipment swing areas from workers, fixed objects or other equipment. Ground personnel shall avoid positioning themselves between fixed objects, operating equipment. Make/maintain eye contact with operators before approaching equipment. Do not approach equipment from rear or from blind spot of operator. Stay out of the swing radius of operating heavy equipment.</li> <li>• Understand and review hand signals. Designate one person to provide hand signals to equipment operators performing lifting/hoisting operations.</li> <li>• Ensure equipment has operable back-up alarms.</li> <li>• Step away from heavy equipment when adjustments (positioning) are made.</li> <li>• Ensure heavy equipment operator has spotter for obstructed views and backing up.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Other	<ul style="list-style-type: none"> <li>▪ Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>▪ Shut down operations in heavy rain and lightning. Seek safe haven in a grounded structure or vehicle. Implement 30 - 30 rule.</li> <li>▪ Buddy System maintained for all phases of work.</li> <li>▪ Base or Local Emergency medical Service and Fire Dispatch numbers programmed into cellular phones. Have hospital route maps readily available.</li> <li>▪ Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.</li> </ul>	NA
<b>EQUIPMENT REQUIRED</b>		<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>
<ul style="list-style-type: none"> <li>• Fire extinguisher (with fuel and electrical sources)</li> <li>• Eye wash (small portable type)</li> <li>• Miscellaneous power and manual hand tools.</li> <li>• First Aid/BbPK/CPR shield</li> <li>• Excavator, Loader, Haul trucks</li> </ul>		<ul style="list-style-type: none"> <li>• Visual Inspections of designated work areas identify and address hazardous conditions.</li> <li>• Equipment inspections and maintenance.</li> <li>• Inspections of hand tools (power) and extension chords if used.</li> </ul>	<ul style="list-style-type: none"> <li>• Review AHA with all task personnel</li> <li>• Review Site Specific Health and Safety Plan for new site personnel.</li> <li>• Supervisors - 1<sup>st</sup> Aid/CPR (two people on-site)</li> <li>• Supervisors - BBLPS, SC-HW (29CFR1910.120(e)(4) or equivalent</li> <li>• Training and medical surveillance in accordance 29CFR1910.120 (HAZWOPER)</li> <li>• Power tool and heavy equipment operators qualified by previous training or experience.</li> </ul>

PRINT

SIGNATURE

Supervisor Name: \_\_\_\_\_

\_\_\_\_\_

Date/Time: \_\_\_\_\_

Safety Officer Name: \_\_\_\_\_

\_\_\_\_\_

Date/Time: \_\_\_\_\_

Site Personnel: \_\_\_\_\_

\_\_\_\_\_

Date/Time: \_\_\_\_\_

AHA Prepared By: Mark Orman



**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS – Site Restoration, Backfill Excavation**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Site Restoration - Backfill Excavations	Adverse Weather	<ul style="list-style-type: none"> <li>• Check internet, local TV weather or radio channels for daily forecasts and plan daily work activities accordingly. Have a portable radio available on-site to monitoring local weather or marine forecasts. If on-site internet or radio monitoring are not available, check with the NAS Brunswick security office if severe weather systems appear to be developing to the east. NAS Brunswick may be able to provide an update local forecast. If not check with home office support personnel who may be able to verify pending regional severe weather conditions.</li> <li>• Frequently observe the eastern skyline for developing rain squalls and thunder storms systems that may developing.</li> <li>• Bring clothing suitable for anticipated daily weather conditions.</li> <li>• Shut down operations during heavy rain/lightning events or high wind conditions. For storms producing lightning, seek safe haven in a grounded structure or rubber vehicle. Implement 30 - 30 rule. Do not seek refuge under trees during electrical or high wind storm events.</li> <li>• Stay away from ravines and gullies during heavy rain events, because of the possibility of flash flood events.</li> <li>• Do not use telephones during electrical storms, except in the case of emergency.</li> </ul>	Standard Level D PPE * * Work clothes, reflective vests/ high visibility clothing, hard hat, safety glasses and sturdy hard toed work boots that provide sufficient ankle support, hand, hearing and face protection, as dictated by task.
	Biological	<ul style="list-style-type: none"> <li>• Observe ground surfaces, enclosed structures, ground water well heads, surrounding vegetation other site features for presence of spiders, bee/wasp hives, stinging centipedes etc.</li> <li>• Where venomous snakes are known to inhabit or may be present, the use of snake guards must be evaluated.</li> <li>• Do not approach fresh or brackish water bodies that could contain alligators.</li> <li>• Where exposure to poisonous plants that have oils, berries, needles that could cause skin irritations, infections or allergic reactions use disposable coveralls for protection.</li> <li>• Observe areas for presence of stinging insects. Prior to starting field activities, <b>notify supervisors of known allergies to stinging insects and location of antidotes.</b></li> <li>• Use insect repellent with DEET or other insect repellent to deter being bit by mosquitoes or other stinging/biting insects. Frequently check body and clothing for ticks, spiders. Where tick exposure is moderate or high exposure, the use of disposable coveralls shall be considered. f there is potential for tick or chigger infestation at the site, personnel shall wear “bug-out” suits or disposable tyvek suits to minimize potential exposures to ticks or other biting insects (i.e., chiggers) in combination with permethrin applied to outer clothing layer (only) or dedicated permethrin impregnated clothing.</li> <li>• Tape pant legs to boots and ensure there are no open seams between boots and pant legs.</li> <li>• Avoid exposure to blood borne pathogens. Use universal precautions against exposure.</li> </ul>	Standard Level D PPE *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS - Site Restoration, Backfill Excavation**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Site Restoration - Backfill Excavations  (cont.)	Excavations	<ul style="list-style-type: none"> <li>• Inspect the excavation every day and after everyday hazard increasing event. Documentation of this inspection must be maintained daily and available as part of the project record. Documentation should be available on-site for inspection.</li> <li>• Personnel may not enter excavations greater than 5' in depth unless shoring and sloping precautions have been implemented. Personnel entering excavations 4' or greater where hazardous atmospheres may exist must first verify hazardous atmospheric conditions do not exist in the excavation.</li> <li>• Where excavation edges are exposed to public, excavations shall be protected and identified from inadvertent access by the public.</li> </ul>	Standard Level D PPE *
	Fire Prevention	<ul style="list-style-type: none"> <li>• Use only metal safety cans for storage and transfer of fuel.</li> <li>• Use funnels and nozzles during fueling operations.</li> <li>• Appropriately sized, easily accessible ABC fire extinguisher in work area.</li> <li>• Fire extinguishers must be inspected monthly (inspection tag) and have an annual maintenance/inspection certification (tag) attached to the extinguisher.</li> <li>• Fire extinguishers shall be approved by a nationally recognized testing laboratory and labeled to identify the listing and labeling organization and the fire test and performance standard that the fire extinguisher meets or exceeds.</li> <li>• Only smoke in designated areas. Designated area must be free of combustible/flammable materials.</li> <li>• ASTs for heavy equipment fuel storage should have secondary containment capabilities.</li> </ul>	Standard Level D PPE *
	Haul trucks	<ul style="list-style-type: none"> <li>• <b>All haul trucks must following the designated Haul Route established for the NAS Brunswick project.</b></li> <li>• Haul truck operators should ensure all persons are clear before operating trucks or equipment. Before moving, operators should sound horn or alarm. All equipment should be equipped with an operational backing alarm.</li> <li>• Haulage trucks or equipment with restricted visibility should be equipped with devices that eliminate blind spots.</li> <li>• Employees should stay off haul roads. When approaching a haul area, employees should make eye contact and communicate their intentions directly with the equipment operator.</li> <li>• Haul trucks should be loaded evenly for proper weight distribution and on stable competent ground.</li> <li>• Stay out of the operating envelop of haul trucks. Do not walk in front of or in back of haul trucks. Ensure you are in the haul truck operators field of vision.</li> </ul>	Standard Level D PPE *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS – Site Restoration, Backfill Excavation**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Site Restoration - Backfill Excavations  (cont.)	High Ambient Temperature	<ul style="list-style-type: none"> <li>• Provide and drink fluids to prevent worker dehydration.</li> <li>• Minimize intake of caffeinated fluids.</li> <li>▪ Institute a proper work-break regiment in a cool area to avoid heat stress symptoms and overexertion.</li> <li>▪ Monitor for signs and symptoms of heat stress (maintain use of buddy system) when the ambient air temperature exceeds 70°F, the relative humidity is high (&gt;50 percent), or when workers exhibit symptoms of heat stress and especially when wearing disposable or other types of coveralls.               <ol style="list-style-type: none"> <li>1) Heat Syncope = Sluggishness or fainting while standing erect or immobile in heat. <i>Treatment = Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.</i></li> <li>2) Heat Rash = Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure. <i>Treatment = Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.</i></li> <li>3) Heat Cramps = Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours. <i>Treatment = Remove to cooler area. Rest lying down. Increase fluid intake.</i></li> <li>4) Heat exhaustion = Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low. <i>Treatment = Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.</i></li> <li>5) Heat Stroke = Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature. <i>Treatment = Cool rapidly by soaking in cool-but not cold-water. Call ambulance, and get medical attention immediately!</i></li> </ol> </li> </ul>	Standard Level D PPE * (light weight cotton/breathable clothing underneath)
	Heavy Equipment	<ul style="list-style-type: none"> <li>• Seat belts or other restraint system shall be used by heavy equipment operators.</li> <li>• Perform daily maintenance and inspections on operating equipment. Keep documentation on site.</li> <li>• Use caution around pressurized lines/hoses. Inspect hoses daily for cuts, abrasions and wear.</li> <li>• Equipment shall only be operated by personnel qualified by prior training or experience.</li> <li>• Ensure that a stable ground surface is available for the operation of heavy equipment.</li> <li>• Equipment operators shall not leave the cab of the equipment while they are lifting/controlling a load unless the load has been delivered to its intended transport location or the load has been fully secured (no potential for rolling onto or crushing ground personnel) and the equipment and controls are fully secured/disengaged and equipment is “de-energized”.</li> </ul>	Standard Level D PPE *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS - Site Restoration, Backfill Excavation**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Site Restoration - Backfill Excavations (cont.)	Manual Lifting	<ul style="list-style-type: none"> <li>• AGVIQ-CH2MHILL or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities, especially lifting operation involving repetitive motions.</li> <li>• When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. Use heavy equipment to transfer heavy or awkward loads wherever possible. Have someone assist with the lift— especially for heavy (&gt; 40lbs.) or awkward loads. Do not attempt to manually lift objects that should otherwise be lifted with heavy equipment.</li> <li>• Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift.</li> <li>• Avoid carrying heavy objects above shoulder level.</li> </ul>	Standard Level D PPE *
	Material Handling	<ul style="list-style-type: none"> <li>• No loads (excavator bucket/boom) shall be passed over ground personnel.</li> <li>• No ground personnel shall walk under or in front of a suspended load.</li> </ul>	Standard Level D PPE *
	Noise	<ul style="list-style-type: none"> <li>• Personnel exposed to loud working environments shall wear hearing protection.</li> </ul>	Standard Level D PPE *
	Overhead Utilities	<ul style="list-style-type: none"> <li>• When using an excavator to backfill, maintain proper separation between Power Transmission Lines and over overhead utilities during the operation of heavy equipment. See Electric Safety section in HSP for references to proper separation between operating equipment and power transmission lines/overhead utilities. Do not swing operate or swing heavy equipment booms or other components of operating heavy equipment toward overhead utilities. Be cognizant of utility pole guy wire positions.</li> <li>• Do not allow haul trucks to raise their beds while underneath overhead utilities.</li> </ul>	Standard Level D PPE *
	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>• Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet/steep slopes, stumps/roots, unprotected holes, ditches, rip rap, utilities, ground protrusions (well casings). Observe and avoid areas of unprotected holes, ramps and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Use sturdy hard toe work boots with sufficient ankle support.</li> <li>• Institute and maintain good housekeeping practices. Clean Work Areas as activities proceed. Clear/removed materials and debris from pathways and commonly traveled areas as soon as possible.</li> <li>• Three points of contact when enter/exiting equipment or when using stairways/ladders.</li> </ul>	Standard Level D PPE *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS - Site Restoration, Backfill Excavation**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Site Restoration - Backfill Excavations (cont.)	Pinched/Struck-by/ Caught-in-between	<ul style="list-style-type: none"> <li>• Sufficient separation between ground support personnel and any operating heavy equipment must be maintained.</li> <li>• Wear reflective vests or high visibility clothing to promote visibility of ground personnel by equipment operators.</li> <li>• Isolate equipment swing areas from workers, fixed objects or other equipment. Ground personnel shall avoid positioning themselves between fixed objects, operating equipment. Make/maintain eye contact with operators before approaching equipment. Do not approach equipment from rear or from blind spot of operator. Stay out of the swing radius of operating heavy equipment.</li> <li>• Understand and review hand signals. Designate one person to provide hand signals to equipment operators performing lifting/hoisting operations.</li> <li>• Ensure equipment has operable back-up alarms.</li> <li>• Step away from heavy equipment when adjustments (positioning) are made.</li> <li>• Ensure heavy equipment operator has spotter for obstructed views and backing up.</li> <li>• When using a chain drive trenching machine for the installation of ESC features, If using trenching equipment, keep hands, feet and arms away from activated drive chains or belts of trench. Stop trenching operations if personnel approach active trenching equipment.</li> <li>• Ensure that all machine guards are in place to prevent contact with drive belts rotary action devises/blades of trenching machine etc. Do not modify safety feature of the trenching machine.</li> <li>• Stay out of the “flip over radius” of operating haul trucks. Do not stand on truck runner board when collecting fill delivery ticket from haul truck driver while the dump body of the haul truck is being raised or lowered.</li> </ul>	Standard Level D PPE *
	Suspended loaded	<ul style="list-style-type: none"> <li>• Suspended loads shall not be passed over ground personnel.</li> <li>• Ground personnel shall not walk under or in front of suspended loads.</li> </ul>	Standard Level D PPE *
	Visible Lighting	<ul style="list-style-type: none"> <li>• Perform tasks in daylight hours whenever possible. If dawn, dusk or dark work is to be performed portable lighting must be provided to sufficient illuminate work area(s).</li> </ul>	Standard Level D PPE *
	Spill Prevention	<ul style="list-style-type: none"> <li>• Ensure that spill control and spill clean-up and materials are on hand prior to initiating any heavy equipment or fueling operations to prevent entry into sensitive receptors.</li> <li>• Only properly trained personnel should respond to/mitigate a spill or release with proper protective clothing and equipment. (Modified Level D or C).</li> </ul>	Standard Level D PPE *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS - Site Restoration, Backfill Excavation**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Site Restoration - Backfill Excavations (cont.)	Other	<ul style="list-style-type: none"> <li>• <b>Verify that EMS services are available and can respond in a prompt manner prior to the start of work.</b></li> <li>• Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>• Buddy System maintained for all phases of work.</li> <li>• Base or Local Emergency medical Service and Fire Dispatch numbers programmed into cellular phones. Have hospital route maps readily available.</li> <li>• Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.</li> </ul>	Standard Level D PPE *
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> <li>• Fire extinguisher (with fuel and electrical sources)</li> <li>• Eye wash (small portable type)</li> <li>• Miscellaneous power and manual hand tools.</li> <li>• First Aid/BbPK/CPR shield</li> <li>• Track excavator and/or bulldozer or loader</li> <li>• Vibratory compactor (~1 T or less)</li> <li>• Haul trucks</li> <li>• Spill Kit</li> <li>• Communication devices</li> </ul>		<ul style="list-style-type: none"> <li>• Visual Inspections of designated work areas identify and address hazardous conditions.</li> <li>• Equipment inspections and maintenance.</li> <li>• Emergency Response equipment Inspections (Fire Extinguishers, Eye wash First Aid/CPR etc.)</li> <li>• Inspections of hand tools (power) and extension chords if used.</li> </ul>	<ul style="list-style-type: none"> <li>• Review AHA with all task personnel</li> <li>• Review Site Specific Health and Safety Plan for new site personnel.</li> <li>• 1<sup>st</sup> Aid/CPR (two people on-site)</li> <li>• Supervisors, SSHO - BBLPS, SCC (10 hr Construction Safety) or equivalent</li> <li>• Competent Person Excavation</li> <li>• Heavy equipment operators qualified by previous training or experience.</li> </ul>

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Supervisor Name: \_\_\_\_\_

\_\_\_\_\_

Date/Time: \_\_\_\_\_

Safety Officer Name: \_\_\_\_\_

\_\_\_\_\_

Date/Time: \_\_\_\_\_

Site Personnel: \_\_\_\_\_

\_\_\_\_\_

Date/Time: \_\_\_\_\_

AHA Prepared By: Mark Orman



**AGVIQ-CH2M HILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Equipment Cleaning (Non CSE) & Management of Generated Waste (As Required)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Equipment Cleaning (Non CSE) & Management of Generated Waste	Adverse Weather	<ul style="list-style-type: none"> <li>• Check internet, local TV weather or radio channels for daily forecasts and plan daily work activities accordingly. Have a portable radio available on-site to monitoring local weather or marine forecasts. If on-site internet or radio monitoring are not available, check with the NAS Brunswick security office if severe weather systems appear to be developing to the east. NAS Brunswick may be able to provide an update local forecast. If not check with home office support personnel who may be able to verify pending regional severe weather conditions.</li> <li>• Frequently observe the eastern skyline for developing rain squalls and thunder storms systems that may developing.</li> <li>• Bring clothing suitable for anticipated daily weather conditions.</li> <li>• Shut down operations during heavy rain/lightning events or high wind conditions. For storms producing lightning, seek safe haven in a grounded structure or rubber vehicle. Implement 30 - 30 rule. Do not seek refuge under trees during electrical or high wind storm events.</li> <li>• Stay away from ravines and gullies during heavy rain events, because of the possibility of flash flood events.</li> <li>• Do not use telephones during electrical storms, except in the case of emergency.</li> </ul>	Modified Level D PPE (D <sub>1</sub> or D <sub>2</sub> ) per HSP* D <sub>1</sub> : Work clothes, reflective vests, hard hat, safety glasses and sturdy hard toed work boots, hearing and hand protection as necessary for task, Hand protection (inner and outer chemical resistant gloves) D <sub>2</sub> : D <sub>1</sub> + chemical resistant suits and boot covers, face protection (as needed)
	Biological	<ul style="list-style-type: none"> <li>• Observe ground surfaces, enclosed structures, ground water well heads, surrounding vegetation other site features for presence of spiders, bee/wasp hives, etc.</li> <li>• Where venomous snakes are known to inhabit or may be present, the use of snake guards must be evaluated.</li> <li>• Do not approach fresh or brackish water bodies that could contain alligators.</li> <li>• Where exposure to poisonous plants that have oils, berries or needle-like projects could cause skin irritations, infections or allergic reactions use disposable coveralls for protection.</li> <li>• Observe areas for presence of stinging insects. Prior to starting field activities, <b>notify supervisors of known allergies to stinging insects and location of antidotes.</b></li> <li>• Use insect repellent with DEET or other insect repellent to deter being bit by mosquitoes or other stinging/biting insects. Frequently check body and clothing for ticks, spiders. If there is potential for tick or chigger infestation at the site, personnel shall wear "bug-out" suits or disposable tyvek suits to minimize potential exposures to ticks or other biting insects (i.e., chiggers) in combination with permethrin applied to outer clothing layer (only) or dedicated permethrin impregnated clothing.</li> <li>• Use permethrin on clothing only to deter tick bites. If this is in effective, use light weight, white disposable clothing.</li> <li>• Tape pant legs to boots and ensure there are no open seams between boots and pant legs.</li> <li>• Avoid exposure to blood borne pathogens. Use universal precautions against exposure.</li> </ul>	Modified Level D PPE (D <sub>1</sub> or D <sub>2</sub> ) per HSP*
	Cuts & Abrasions	<ul style="list-style-type: none"> <li>• Wear cut resistant work gloves, when the possibility of lacerations or other injury may be caused by sharp edges of hand tools.</li> </ul>	Modified Level D PPE (D <sub>1</sub> or D <sub>2</sub> ) per HSP*

**AGVIQ-CH2M HILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Equipment Cleaning (Non CSE) & Management of Generated Waste (As Required)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Equipment Cleaning (Non CSE) & Management of Generated Waste (cont.)	Chemical Exposure	<ul style="list-style-type: none"> <li>• All personnel performing this task shall be trained in accordance with 29CFR1910.120 and be rolled in a medical monitoring program.</li> <li>• <b>Where any work involves a Confined Space Entry (CSE) a separate AHA, PPE, Air Monitoring Equipment and engineering control measures shall be put in place prior to executing this work.</b></li> <li>• Pregnant or potentially pregnant AGVIQ-CH2M HILL personnel to review Standard of Practice HSE-120, Reproductive Protection before performing any hazardous or potentially hazardous duty.</li> <li>• Do not allow dermal contact or incidental ingestion of impacted soil or groundwater. Skin contact with contaminated water, soils, debris, or equipment shall be avoided at all times. Do not kneel or step in potentially contaminated media (soil or ground water) without first donning proper PPE.</li> <li>• Exercise good hygiene practices. Always wash hands before eating, drinking, smoking and leaving site. Only eat, drink, smoke or chew tobacco in designated areas.</li> <li>• Do not allow on-site haul truck operators to climb into dump bodies without proper PPE.</li> <li>• Adhere to PPE and action monitoring level requirements identified in the Sections 5.0 and 6.0 of the site specific HSP.</li> </ul>	Modified Level D PPE (D <sub>1</sub> or D <sub>2</sub> ) per HSP*
	Electrical Safety	<ul style="list-style-type: none"> <li>• Do not connect car batteries direct to sampling devices for power. Use a generator, GCFI or other protected circuit.</li> <li>• If/when electrical extension cords are required to complete work, extension cords must be:               <ul style="list-style-type: none"> <li>- Equipped with third-wire grounding.</li> <li>- Covered, elevated, or protected from damage when passing through work areas.</li> <li>- Protected from pinching if routed through doorways.</li> <li>- Not fastened with staples, hung from nails, or suspended with wire.</li> <li>- Extension cords and electrical power tools, must have ground fault circuit interrupters (GFCIs) installed.                   <ul style="list-style-type: none"> <li>- Inspected all extension cords daily for structural integrity, ground continuity, and damaged insulation.</li> <li>- Kept out of water/liquids.</li> <li>- Electrical power circuits should be inspected before plugging in extension cords.</li> </ul> </li> </ul> </li> </ul>	Modified Level D PPE (D <sub>1</sub> or D <sub>2</sub> ) per HSP*
	Hand Tools	<ul style="list-style-type: none"> <li>• Select and use the proper tool for the task.</li> <li>• Do not use tools that have been damaged or repaired in a manner which is not consistent with manufacturer's requirements.</li> </ul>	Modified Level D PPE (D <sub>1</sub> or D <sub>2</sub> ) per HSP*

**AGVIQ-CH2M HILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Equipment Cleaning (Non CSE) & Management of Generated Waste (As Required)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Equipment Cleaning (Non CSE) & Management of Generated Waste (cont.)	Fire Prevention	<ul style="list-style-type: none"> <li>• Only smoke in designated areas. Designated area must be free of combustible/flammable materials.</li> <li>• Use only metal safety cans for storage and transfer of fuel.</li> <li>• Use funnels and nozzles during fueling operations.</li> <li>• Appropriately sized, easily accessible ABC fire extinguisher in work area. Fire extinguishers must be inspected monthly (inspection tag) and have an annual maintenance/inspection certification (tag) attached to the extinguisher.</li> <li>• Fire extinguishers shall be approved by a nationally recognized testing laboratory and labeled to identify the listing and labeling organization and the fire test and performance standard that the fire extinguisher meets or exceeds.</li> </ul>	Modified Level D PPE (D <sub>1</sub> or D <sub>2</sub> ) per HSP*
	High Ambient Temperature	<ul style="list-style-type: none"> <li>• Provide and drink fluids to prevent worker dehydration.</li> <li>• Minimize intake of caffeinated fluids.</li> <li>▪ Institute a proper work-break regiment in a cool area to avoid heat stress symptoms and overexertion.</li> <li>▪ Monitor for signs and symptoms of heat stress (maintain use of buddy system) when the ambient air temperature exceeds 70°F, the relative humidity is high (&gt;50 percent), or when workers exhibit symptoms of heat stress and especially when wearing disposable or other types of coveralls.               <ol style="list-style-type: none"> <li>1) Heat Syncope = Sluggishness or fainting while standing erect or immobile in heat. <i>Treatment = Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.</i></li> <li>2) Heat Rash = Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure. <i>Treatment = Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.</i></li> <li>3) Heat Cramps = Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours. <i>Treatment = Remove to cooler area. Rest lying down. Increase fluid intake.</i></li> <li>4) Heat exhaustion = Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low. <i>Treatment = Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.</i></li> <li>5) Heat Stroke = Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature. <i>Treatment = Cool rapidly by soaking in cool-but not cold-water. Call ambulance, and get medical attention immediately!</i></li> </ol> </li> </ul>	Modified Level D PPE (D <sub>1</sub> or D <sub>2</sub> ) per HSP* (light weight cotton/breathable clothing underneath)

**AGVIQ-CH2M HILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Equipment Cleaning (Non CSE) & Management of Generated Waste (As Required)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Equipment Cleaning (Non CSE) & Management of Generated Waste (cont.)	Manual Lifting	<ul style="list-style-type: none"> <li>• AGVIQ-CH2M HILL or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities, especially lifting operation involving repetitive motions.</li> <li>• When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. Use heavy equipment to transfer heavy or awkward loads wherever possible. Have someone assist with the lift— especially for heavy (&gt; 40lbs.) or awkward loads. Do not attempt to manually lift objects that should otherwise be lifted with heavy equipment.</li> <li>• Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift.</li> <li>• Avoid carrying heavy objects above shoulder level.</li> <li>• Use drum dollies for the movement of drums used for the storage of wastes generated on the project.</li> </ul>	Modified Level D PPE (D <sub>1</sub> or D <sub>2</sub> ) per HSP*
	Sample Handling	<ul style="list-style-type: none"> <li>• Skin contact with contaminated water shall be avoided at all times.</li> <li>• Caution should be exercised when filling bottles containing acid or base preservatives. Both liquid and vapor phases of acid can cause severe burns.</li> <li>• Following sample collection, sample container lids should be tightened securely to prevent any leaks, and the containers should be rinsed with clean water to ensure that they are free of chemical constituents before labeling and placing them in the cooler for shipment to the laboratory.</li> <li>• <b>Sample or open only labeled drums or drums known to contain generated waste materials. Unknown drums or drums that show evidence of excessive buckling/bulging, corrosion, vapors, crystallization, unusual discoloration or other abnormalities may not be sampled without the evaluation of engineering controls, proper PPE air monitoring equipment and the use properly trained personnel familiar with the sampling of unknown drum contents. If there is any question to the proper handling or opening of drums.</b></li> <li>• Minimize transportation of drums or other containers with waste materials.</li> <li>• Follow proper decontamination procedures for sample equipment. Properly containerize, label, store and dispose of any decontamination wastes.</li> </ul>	Modified Level D PPE (D <sub>1</sub> or D <sub>2</sub> ) per HSP*
	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>• Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet/steep slopes, stumps/roots, unprotected holes, ditches, rip rap, utilities, ground protrusions (well casings). Observe and avoid areas of unprotected holes, ramps and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Use sturdy hard toe work boots with sufficient ankle support.</li> <li>• Institute and maintain good housekeeping practices. Clean Work Areas as activities proceed. Clear/removed materials and debris from pathways and commonly traveled areas as soon as possible. .</li> </ul>	Modified Level D PPE (D <sub>1</sub> or D <sub>2</sub> ) per HSP*

**AGVIQ-CH2M HILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick**  
**ACTIVITY HAZARD ANALYSIS - Equipment Cleaning (Non CSE) & Management of Generated Waste (As Required)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Equipment Cleaning (Non CSE) & Management of Generated Waste (cont.)	Pressure Washing	<ul style="list-style-type: none"> <li>• Inspect pressure washer before use and confirm dead man switch fully operational.</li> <li>• The wand must always be pointed at the work area.</li> <li>• The Wand trigger should never be tied down in the open position.</li> <li>• Never point the wand at yourself or another worker.</li> <li>• The wand must be at least 42 inches from the trigger to the tip.</li> <li>• The operator must maintain good footing.</li> <li>• Non-operators must remain a safe distance from the operator.</li> <li>• No unauthorized attachment may be made to the unit.</li> <li>• Do not modify the wand.</li> <li>• All leaks or malfunctioning equipment must be repaired immediately or the unit taken out-of-service.</li> <li>• Rain gear (disposal coated chemical suits for Hazwoper operations), 16-inch-high steel-toed rubber boots, safety glasses, hard hat with face shield, and inner and outer nitrile gloves should be worn, at a minimum during pressure washing operations.</li> </ul>	Modified Level D PPE (D <sub>1</sub> or D <sub>2</sub> ) per HSP*
	Visible Lighting	<ul style="list-style-type: none"> <li>• Perform tasks in daylight hours whenever possible. If dawn, dusk or dark work is to be performed portable lighting must be provided to sufficient illuminate work area(s).</li> </ul>	Modified Level D PPE (D <sub>1</sub> or D <sub>2</sub> ) per HSP*
	Vehicular Traffic	<ul style="list-style-type: none"> <li>• Shut off and secure site vehicles prior to exiting them. Park on level ground where possible. If parking on an incline, engage parking brake. If the vehicle has a manual transmission, ensure the transmission is in gear (not neutral) and the parking brake is engaged before exiting the vehicle.</li> <li>• Exercise caution when exiting traveled way or parking along street— avoid sudden stops, use flashers, etc.</li> <li>• Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier.</li> <li>• All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.</li> </ul>	Modified Level D PPE (D <sub>1</sub> or D <sub>2</sub> ) per HSP*
	Other	<ul style="list-style-type: none"> <li>• <b>Verify that EMS services are available and can respond in a prompt manner prior to the start of work.</b></li> <li>• Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>• Buddy System maintained for all phases of work.</li> <li>• Base or Local Emergency medical Service and Fire Dispatch numbers programmed into cellular phones. Have hospital route maps readily available.</li> <li>• Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.</li> </ul>	Modified Level D PPE (D <sub>1</sub> or D <sub>2</sub> ) per HSP*

EQUIPMENT REQUIRED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> <li>• Fire extinguisher (with fuel and electrical sources)</li> <li>• Eye wash (small portable type)</li> <li>• Miscellaneous hand tools.</li> <li>• Pressure Washer</li> <li>• Drum Dolly</li> <li>• Sample coolers, containers and equipment</li> <li>• First Aid/BbPK/CPR shield</li> <li>• Communication devices</li> </ul>	<ul style="list-style-type: none"> <li>• Visual Inspections of designated work areas identify and address hazardous conditions.</li> <li>• Emergency Response equipment Inspections (Fire Extinguishers, Eye wash First Aid/CPR etc.)</li> <li>• Inspections of hand tools, generator and power cords, if used.</li> </ul>	<ul style="list-style-type: none"> <li>• Review AHA with all task personnel</li> <li>• Review Site Specific Health and Safety Plan for new site personnel.</li> <li>• 1<sup>st</sup> Aid/CPR (two people on-site)</li> <li>• Supervisors, SSHO - BBLPS, SC-HW (29CFR1910.120(e)(4) or equivalent, SCC (10 hr Construction Safety)</li> <li>• All - Training and medical surveillance in accordance 29CFR1910.120 (HAZWOPER) or 29CFR1910.134 (respiratory, as necessary)</li> <li>• Power tool operators qualified by previous training or experience.</li> </ul>

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Supervisor Name:

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Date/Time: \_\_\_\_\_

Safety Officer Name:

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Date/Time: \_\_\_\_\_

Site Personnel:

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Date/Time: \_\_\_\_\_

AHA Prepared By: Mark Orman



**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS -- Cleaning of Frac Tanks (CSE Operations)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Cleaning of Frac Tanks (CSE Operations)	Confined Space Entry	<ul style="list-style-type: none"> <li>• Review and execute CH2MHILL SOP # 203 Confined Space Entry (CSE).</li> <li>• Complete CSE Permit and satisfy all requirements of CSE Permit prior to executing this work.</li> <li>• Review CSE entrant, supervisor and attendant duty requirements.</li> <li>• Review any specific confined space entry requirements with NAS Brunswick POCs.</li> <li>• CSE entrants, attendant and supervisor must be CSE trained (29CFR1910.146)</li> <li>• Establish and verify CSE rescue and emergency services method prior to executing work Verify that emergency rescue services are qualified and available to perform rescue entry duties, prior to the start of any CSE operation.</li> <li>• O2, LEL CO, H2S and Total VOC (PID) and Benzene concentrations or other hazardous atmospheric conditions shall be constantly monitored by attendant. PPE and Engineering controls (Ventilation) must be in place to manage the confined space conditions prior to making the entry.</li> <li>• Should conditions or hazards change, the CSE shall be terminated, and other means of retaining access will be evaluated.</li> <li>• An outside attendant shall be present at all times during confined space entry work, shall monitor the confined space and record entry and exit times of all entrants.</li> <li>• Only authorized entrants shall be allowed to enter the confined space.</li> <li>• In the event of an emergency, the attendant shall not enter the confined space. Only the designated Emergency Response personnel shall or qualified retrieval system shall be used in the event of an emergency. The attendant and crew shall attempt to retrieve the disabled employee from the outside of the confined space using the lifeline/lanyard retrieval system first.</li> <li>• The confined space entry supervisor shall have the capability of being in contact with facility on-site or local emergency rescue units at all times during CSE work.</li> <li>• Employees shall inspect harnesses, lanyards, and other CSE equipment daily and before use for damages and defects. Damaged CSE equipment shall be rendered inoperable and disposed of.</li> </ul>	<p align="center">Level C PPE *</p> <p>* Appropriate work clothes, hard hat, and sturdy hard toed work boots with chemical resistant over boots or hard toe chemical resistant boots, chemical/liquid resistant gloves, poly-coated disposable chemical/liquid resistant disposable suits, hearing protection and full face APR with Organic Vapor (GME) – P100 HEPA cartridges</p> <p align="center">Retrieval system: (harness(es), lanyard(s), life line(s), communication devices)</p>
	Chemical Exposure	<ul style="list-style-type: none"> <li>• All personnel performing this task shall be trained in accordance with 29CFR1910.120/29CFR1926.65 and be enrolled in a medical surveillance program (secure/review worker documentation).</li> <li>• Personnel wearing respiratory protections shall have reviewed the applicable respiratory protection program, been fit tested with a quantitative fit testing machine and understand proper cleaning maintenance and stowage of respiratory protection equipment.</li> <li>• Follow PPE and action level requirements identified in sections 5.0 and 6.0, respectively, of the site specific HSP.</li> <li>• Exercise good hygiene practices. Always wash hands before eating, drinking, smoking and leaving site. Only eat, drink, smoke or chew tobacco in designated areas.</li> <li>• Shower as soon as possible after leaving the work site.</li> <li>• Adhere to PPE and action monitoring level requirements identified in the sections 5.0 and 6.0 of the site specific HSP.</li> </ul>	<p align="center">Level C PPE *</p>

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS -- Cleaning of Frac Tanks (CSE Operations)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Cleaning of Frac Tanks (CSE Operations) (continued)	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>• Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet/steep slopes, stumps/roots, unprotected holes, ditches, rip rap, utilities, ground protrusions. Observe and avoid areas of unprotected holes, ramps and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Use sturdy hard toe work boots with sufficient ankle support.</li> <li>• Institute and maintain good housekeeping practices. Clean Work Areas as activities proceed. Clear/removed materials and debris from pathways and commonly traveled areas as soon as possible.</li> <li>• Evaluate disposable/re-usable footwear to provide footwear that gives workers the best traction/slip resistance capabilities inside the Frac Tank during decon. operations.</li> </ul>	Level C PPE *
	Noise	<ul style="list-style-type: none"> <li>• Personnel exposed to loud working environments shall wear hearing protection.</li> </ul>	Level C PPE *
	Visible Lighting	<ul style="list-style-type: none"> <li>• Perform tasks in daylight hours whenever possible. If dawn, dusk or dark work is to be performed portable lightly must be provided to sufficient illuminate work area(s).</li> <li>• <b>Use ONLY Explosion Proof lighting inside CSE areas during cleaning operations.</b></li> </ul>	Level C PPE *
	Fire/Explosion Prevention	<ul style="list-style-type: none"> <li>▪ Use only metal safety cans for storage and transfer of fuel.</li> <li>▪ Use funnels and nozzles during fueling operations.</li> <li>▪ Appropriately sized, easily accessible ABC fire extinguisher in work area.</li> <li>▪ Review and be cognizant of NAS Brunswick Fire Prevention Procedures and Requirements. Secure a Hot Work permit from NAS Brunswick Fire Department representatives and institute fire watch provisions and conditions of Hot Work permit before performing Hot Work related work.</li> <li>▪ See Vacuum Truck Operations for explosion prevention procedures.</li> </ul>	Level C PPE *
	Struck/pinched	<ul style="list-style-type: none"> <li>• Wear reflective warning vests or high visibility clothing.</li> <li>• Isolate any equipment operating envelop from workers, fixed objects.</li> <li>• Make/maintain eye contact with operators before approaching equipment. Do not approach operating equipment from the rear or from blind spot of operator.</li> <li>• Understand and review hand signals. Designate one person to provide hand signals to equipment operators.</li> <li>• Ensure equipment has operable back-up alarms.</li> <li>• Avoid positioning between fixed objects and operating equipment.</li> </ul>	Level C PPE *
	Electric Hazards	<ul style="list-style-type: none"> <li>• If/when electrical extension cords are required to complete work, extension cords must be:               <ul style="list-style-type: none"> <li>- Equipped with third-wire grounding.</li> <li>- Covered, elevated, or protected from damage when passing through work areas.</li> <li>- Protected from pinching if routed through doorways.</li> <li>- Not fastened with staples, hung from nails, or suspended with wire.</li> <li>- Extension cords and electrical power tools, must have ground fault circuit interrupters (GFCIs) installed.</li> <li>- Rated to handle the voltage/amperage of equipment.</li> </ul> </li> </ul>	Level C PPE *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS -- Cleaning of Frac Tanks (CSE Operations)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Cleaning of Frac Tanks (CSE Operations) (continued)	Vacuum Trucks Operation	<ul style="list-style-type: none"> <li>• <b>Operate vacuum truck in accordance with API Recommended Practice 2219, "Safe Operations of Vacuum Trucks in Petroleum Service".</b></li> <li>• Locate vacuum truck upwind of tank with discharge hose downwind of truck and tank</li> <li>• Keep vacuum truck operations area free from flammable vapors.</li> <li>• Bond and ground vacuum truck hoses to truck and well head when conveying free product to prevent static electricity discharges/sparks.</li> <li>• Perform LEL monitoring at vacuum truck drive motor during free product removal and shutdown vacuum truck operations with 10% LEL reading in the immediate area.</li> <li>• Keep hands from vacuum hose inlet.</li> <li>• Wear protective gloves and hearing protection in the immediate vicinity.</li> <li>• Do not place vacuum hose inlet in a position that may inadvertently contact other workers in the area.</li> </ul>	Level C PPE *
	Pressure washing	<ul style="list-style-type: none"> <li>• Only trained, authorized personnel may operate the pressure washer.</li> <li>• Follow manufacturer's safety and operating instructions.</li> <li>• Inspect pressure washer before use and confirm a power shut-off or emergency stop switch is fully operational.</li> <li>• The wand must always be pointed at the work area only.</li> <li>• The trigger should never be tied down in the open position.</li> <li>• Never point the wand at yourself or another worker.</li> <li>• The wand must be at least 42 inches from the trigger to the tip.</li> <li>• The operator must maintain good footing.</li> <li>• Non-operators must remain a safe distance from the operator.</li> <li>• No unauthorized attachment may be made to the unit.</li> <li>• Do not modify the wand.</li> <li>• All leaks or malfunctioning equipment must be repaired immediately or the unit taken out-of-service.</li> </ul>	Level C PPE *
	Hand & Power Tools	<ul style="list-style-type: none"> <li>• Perform daily or more frequent inspections on power tools, as may be needed</li> <li>• Power tools shall only be operated by personnel qualified by prior training or experience.</li> <li>• Ensure that a stable, level, dry work surface is available for the operation of power tools.</li> <li>• All required guards are in place, functioning and utilized.</li> <li>• Hand held power tools equipped with constant pressure switch. Tools inspected before use. Maintain all tools in a safe condition.</li> <li>• Select and use the proper tool for the task.</li> <li>• Do not use tools that have been damaged or repaired in a manner which is not consistent with manufacturer's requirements.</li> </ul>	Level C PPE *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS -- Cleaning of Frac Tanks (CSE Operations)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Cleaning of Frac Tanks (CSE Operations) (continued) (cont)	High Ambient Temperature	<ul style="list-style-type: none"> <li>• Provide and drink fluids to prevent worker dehydration.</li> <li>• Minimize intake of caffeinated fluids.</li> <li>▪ Institute a proper work-break regiment in a cool area to avoid heat stress symptoms and overexertion.</li> <li>▪ Monitor for signs and symptoms of heat stress (maintain use of buddy system) when the ambient air temperature exceeds 70°F, the relative humidity is high (&gt;50 percent), or when workers exhibit symptoms of heat stress and especially when wearing disposable or other types of coveralls.                             <ol style="list-style-type: none"> <li>1) Heat Syncope = Sluggishness or fainting while standing erect or immobile in heat. <i>Treatment = Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.</i></li> <li>2) Heat Rash = Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure. <i>Treatment = Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.</i></li> <li>3) Heat Cramps = Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours. <i>Treatment = Remove to cooler area. Rest lying down. Increase fluid intake.</i></li> <li>4) Heat exhaustion = Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low. <i>Treatment = Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.</i></li> <li>5) Heat Stroke = Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature. <i>Treatment = Cool rapidly by soaking in cool-but not cold-water. Call ambulance, and get medical attention immediately!</i></li> </ol> </li> </ul>	Level C PPE * (light colored clothing)
	Low Ambient Temperature	<ul style="list-style-type: none"> <li>• Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather.</li> <li>• Frequent intake of non-caffeinated fluids to maintain body core temperature.</li> <li>• Frequent intake of non- caffeinated to prevent dehydration.</li> <li>• Obtain and review weather forecast – be aware of predicted weather systems.</li> <li>• Observe one (buddy system) another for initial signs of cold-related disorders.</li> <li>• Frequent observance of Wind Chill Chart (HSP) to assist with work warming regiment determination and frostbite avoidance</li> </ul>	Standard Level D PPE * * level D PPE plus warm multi-layered clothing including hard hat liners and foul weather gear, as necessary

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick  
ACTIVITY HAZARD ANALYSIS -- Cleaning of Frac Tanks (CSE Operations)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Cleaning of Frac Tanks (CSE Operations) (continued) (cont)	Stairways & ladders	<ul style="list-style-type: none"> <li>• A Stairway or ladder is generally required when a break in elevation of 19 inches or greater exists.</li> <li>• Personnel should avoid using both hands to carry objects while on stairways; if unavoidable, use extra precautions. Do not work out-side of the rails a ladder.</li> <li>• Ladders must be inspected for visible defects prior to each day's use. Defective ladders must be tagged and removed from service.</li> <li>• Ladders must be used only for the purpose for which they were designed and will not be loaded beyond their rated capacity.</li> </ul> <p>Only one person at a time will climb on or work from an individual ladder. Ladders shall be extended to 3' above its landing surface and be secured from movement.</p>	Level C PPE *
	Other	<ul style="list-style-type: none"> <li>▪ Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>▪ Shut down operations in heavy rain and lightning. Seek safe haven in a grounded structure or vehicle. Implement 30 - 30 rule.</li> <li>▪ Buddy System maintained for all phases of work.</li> <li>▪ Base Emergency Dispatch numbers programmed into cellular phones. Have hospital route maps readily available.</li> <li>▪ Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.</li> </ul>	NA
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> <li>• Fire extinguisher (with fuel and electrical sources)</li> <li>• Eye wash (small portable type)</li> <li>• Miscellaneous power and manual hand tools.</li> <li>• First Aid/BbPK/CPR shield</li> <li>• extension chords</li> <li>• CSE Ventilation</li> <li>• Explosion Proof Lighting</li> <li>• Air Monitoring Equipment (section 6.0 of HSP)</li> <li>• CSE retrieval system.</li> <li>• Pressure washer.</li> </ul>		<ul style="list-style-type: none"> <li>• Visual Inspections of designated work areas identify and address hazardous conditions.</li> <li>• Equipment inspections and maintenance.</li> <li>• Inspections of hand tools (power) and extension chords if used.</li> </ul>	<ul style="list-style-type: none"> <li>• Review AHA with all task personnel</li> <li>• Review Site Specific Health and Safety Plan for new site personnel.</li> <li>• Review operations/safety manuals for all equipment utilized.</li> <li>• 1<sup>st</sup> Aid/CPR (two people on-site)</li> <li>• Supervisors, SSHO - BBLPS, SC-HW (29CFR1910.120(e)(4) or equivalent, SCC (10 hr Construction Safety)</li> <li>• All - Training and medical surveillance in accordance 29CFR1910.120 (HAZWOPER) or 29CFR1910.134 (respiratory, as necessary)</li> <li>• Power tool operators qualified by previous training or experience.</li> <li>• 29CFR1910.146</li> </ul>

PRINT

SIGNATURE

Supervisor Name: \_\_\_\_\_

\_\_\_\_\_

Date/Time: \_\_\_\_\_

Safety Officer Name: \_\_\_\_\_

\_\_\_\_\_

Date/Time: \_\_\_\_\_

Site Personnel: \_\_\_\_\_

\_\_\_\_\_

Date/Time: \_\_\_\_\_

AHA Prepared By: Glen Jackson



**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick (Sabino Hill Rake Tower)  
ACTIVITY HAZARD ANALYSIS - Excavation/Management of Lead Impacted Soil & Confirmation Sampling**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Excavation/Management of Lead Impacted Soil & Confirmation Sampling	Adverse Weather	<ul style="list-style-type: none"> <li>• Check internet, local TV weather or radio channels for daily forecasts and plan daily work activities accordingly. Have a portable radio available on-site to monitoring local weather or marine forecasts. If on-site internet or radio monitoring are not available, check with the NAS Brunswick security office if severe weather systems appear to be developing to the east. NAS Brunswick may be able to provide an update local forecast. If not check with home office support personnel who may be able to verify pending regional severe weather conditions.</li> <li>• Frequently observe the eastern skyline for developing rain squalls and thunder storms systems that may developing.</li> <li>• Bring clothing suitable for anticipated daily weather conditions.</li> <li>• Shut down operations during heavy rain/lightning events or high wind conditions. For storms producing lightning, seek safe haven in a grounded structure or rubber vehicle. Implement 30 - 30 rule. Do not seek refuge under trees during electrical or high wind storm events.</li> </ul>	<p>Level D<sub>1</sub> or D<sub>2</sub> Modified PPE or as required by HSP*</p> <p>* D: Work clothes, reflective vests, hard hat, safety glasses and sturdy hard toed work boots, hearing and hand protection as necessary for task.</p> <p>D<sub>1</sub> : D + hand protection (inner and outer chemical resistant gloves)</p> <p>D<sub>2</sub>: D<sub>1</sub>+ chemical resistant suits and boot covers, face protection (as needed)</p>
	Chemical Exposure	<ul style="list-style-type: none"> <li>• All personnel performing this task shall be trained in accordance with 29CFR1910.120 and been rolled in a medical monitoring program and receive Lead Awareness training meeting the criteria of 29CFR1910.1025(l)/29CFR1926.62(l).</li> <li>• Do not allow dermal contact or incidental ingestion of lead impacted soil or water. Skin contact with lead impacted soil, water, debris or equipment shall be avoided at all times. Do not kneel or step in potentially contaminated mediawithout first donning proper PPE.</li> <li>• Exercise good hygiene practices. Always wash hands before eating, drinking, smoking and leaving site. Only eat, drink, smoke or chew tobacco in designated areas.</li> <li>• Do not allow on-site haul truck operators to climb into dump bodies without proper PPE.</li> <li>• Adhere to PPE and action monitoring level requirements identified in the sections 5.0 and 6.0 of the site specific HSP. Conduct lead personnel sampling for workers and perimeter lead sampling in accordance with section 6.0 of the HSP.</li> </ul>	<p>Level D<sub>1</sub> or D<sub>2</sub> Modified PPE or as required by HSP *</p>

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick (Sabino Hill Rake Tower)  
ACTIVITY HAZARD ANALYSIS - Excavation/Management of Lead Impacted Soil & Confirmation Sampling**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Excavation/Management of Lead Impacted Soil & Confirmation Sampling (cont.)	Biological	<ul style="list-style-type: none"> <li>• Observe ground surfaces, building structure, surrounding vegetation other site features for presence of spiders, bee/wasp hives etc.</li> <li>• Observe areas for presence of stinging insects. Prior to starting field activities, <b>notify supervisors of known allergies to stinging insects and location of antidotes.</b></li> <li>• Use insect repellent or permethrin (clothes). Tape pant legs to boots and ensure there are no open seams between boots and pant legs. Frequently check body and clothing for ticks, spiders. Where tick exposure is moderate or high exposure, the use of disposable coveralls shall be considered. If there is potential for tick or chigger infestation at the site, personnel shall wear “bug-out” suits or disposable tyvek suits to minimize potential exposures to ticks or other biting insects (i.e., chiggers) in combination with permethrin applied to outer clothing layer (only) or dedicated permethrin impregnated clothing.</li> </ul> <p>Avoid exposure to blood borne pathogens. Use universal precautions against exposure.</p>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Buried Objects	<ul style="list-style-type: none"> <li>• Contact <b>Dig Safe</b> to secure a utility owner verification request number at 888-344-7233 for utility clearance verification. Keep copies of any written documentation (faxes, email printouts) regarding utility location verification provided by utilities owners in the office project file and in a working field file on-site.</li> <li>• Photo document owner provided field utility mark-outs as related to proposed limits of ground disturbing activities prior to the start of work.</li> <li>• Conduct “third” party utility clearance when the locations of utilities may be in question and document results of third party utility location.</li> <li>• Determine if an NAS Brunswick/NAVFAC “Excavator Permit” is required prior to performing any ground disturbing activities.</li> <li>• Hand dig around identified utilities (within 5’) or as otherwise required by NAS Brunswick issued excavation permit.</li> <li>• Review base engineering records or drawings against utility owner or third party utility mark-out to verify any potential differences.</li> <li>• Protect and preserve the markings of approximate locations of facilities until the markings are no longer required for safe and proper excavations. If the markings of utility locations are destroyed or removed before excavation commences or is completed, utilities must be relocated/marked.</li> <li>• Where unknown or unanticipated buried objects are encountered (i.e. drums, tanks, cylinders, munitions of explosive concern, soil with unusual staining or odor) AGVIQ-CH2M HILL JV or subcontractor personnel shall 1) secure equipment to the extent possible, without causing bodily injury, 2) evacuate the work area and 3) immediately notify the site manager, SSHO or PM of the encountered condition. Work may only resume with appropriate documentation/notification that exposure hazards (physical or chemical) do not exist. Notify AGVIQ-CH2M HILL JV PM and program officials and applicable NAVFAC POCs and do not resume work until authorized to do so.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick (Sabino Hill Rake Tower)  
ACTIVITY HAZARD ANALYSIS – Excavation/Management of Lead Impacted Soil & Confirmation Sampling**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Excavation/Management of Lead Impacted Soil & Confirmation Sampling (cont.)	Excavations (> 1' bgs)	<ul style="list-style-type: none"> <li>• The competent person must inspect the excavation every day and after everyday hazard increasing event. Documentation of this inspection must be maintained on site at all times.</li> <li>• Provide Excavation Perimeter Protection and Warning signs as necessary to be in compliance with EM 385 11-1, Section 25B Safe Access and Appendix Q, "Perimeter Protection".</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Fire Prevention	<ul style="list-style-type: none"> <li>• Only smoke in designated areas. Do not smoke in the close proximity of the forest/ wooded areas, there shall be no smoking in areas where brush fires could occur (leaves, dry grass, dry pine needles etc.)</li> <li>• Use only metal safety cans for storage and transfer of fuel.</li> <li>• Use funnels and nozzles during fueling operations.</li> <li>• Appropriately sized, easily accessible ABC fire extinguisher in work area.</li> <li>• Ensure that heavy equipment is affixed with a spark arrestor</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Heavy Equipment	<ul style="list-style-type: none"> <li>• Seat belts or other restraint system shall be used by heavy equipment operators.</li> <li>• Perform daily maintenance and inspections on operating equipment. Keep documentation on site.</li> <li>• Use caution around pressurized lines/hoses. Inspect hoses daily for cuts, abrasions and wear.</li> <li>• Equipment shall only be operated by personnel qualified by prior training or experience.</li> <li>• Ensure that a stable ground surface is available for the operation of heavy equipment.</li> <li>• Do not swing overhead loads over ground personnel.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Manual Lifting	<ul style="list-style-type: none"> <li>• AGVIQ-CH2M HILL or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities.</li> <li>• When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. Use heavy equipment to transfer heavy or awkward loads wherever possible. Have someone assist with the lift – especially for heavy (&gt; 40lbs.) or awkward loads. Do not attempt to manually lift objects that should otherwise be lifted with heavy equipment.</li> <li>• Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift. <ul style="list-style-type: none"> <li>▪ Avoid carrying heavy objects above shoulder level.</li> </ul> </li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Noise	<ul style="list-style-type: none"> <li>• Personnel exposed to loud working environments shall wear hearing protection.</li> <li>• Wear hearing protection in open cabs of heavy equipment or when working adjacent to operating heavy equipment.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Visible Lighting	<ul style="list-style-type: none"> <li>• Perform tasks in daylight hours whenever possible. If dawn, dusk or dark work is to be performed portable lighting must be provided to sufficiently illuminate work area(s).</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick (Sabino Hill Rake Tower)  
ACTIVITY HAZARD ANALYSIS - Excavation/Management of Lead Impacted Soil & Confirmation Sampling**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Excavation/Management of Lead Impacted Soil & Confirmation Sampling (Cont.)	Vehicular traffic & Haul trucks	<ul style="list-style-type: none"> <li>• Shut off and secure site vehicles prior to exiting them. Park on level ground where possible. If parking on an incline, engage parking brake. If the vehicle has a manual transmission, ensure the transmission is in gear (not neutral) and the parking brake is engaged before exiting the vehicle.</li> <li>• Exercise caution when exiting traveled way or parking along street— avoid sudden stops, use flashers, etc.</li> <li>• Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier.</li> <li>• All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.</li> <li>• <b>All haul trucks must following the designated Haul Route established for the NAS Brunswick (Sabino Hill Rake Tower ) project.</b></li> <li>• Haul truck operators should be familiar with their equipment and inspect all equipment before use.</li> <li>• Haul truck operators should ensure all persons are clear before operating trucks or equipment. Before moving, operators should sound horn or alarm. All equipment should be equipped with an operational backing alarm.</li> <li>• Haulage trucks or equipment with restricted visibility should be equipped with devices that eliminate blind spots.</li> <li>• Employees should stay off haul roads. When approaching a haul area, employees should make eye contact and communicate their intentions directly with the equipment operator.</li> <li>• Where grades are steep, provide signs indicating the actual grade as well as measures for a runaway truck..</li> <li>• Haul roads should be well lit, sufficiently wide (at least 50% of the width of the equipment on both sides of road) and equipped with reflectors to indicate access points.</li> <li>• Haul roads should have adequate right-of-way signs indicating haul directions, where appropriate</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Sampling	<ul style="list-style-type: none"> <li>• Follow chemical exposure hazard control measures identified in this AHA.</li> <li>• Caution should be exercised when filling bottles containing acid or base preservatives. Both liquid and vapor phases of acid can cause severe burns. <ul style="list-style-type: none"> <li>▪ Following sample collection, sample container lids should be tightened securely to prevent any leaks, and the containers should be rinsed with clean water to ensure that they are free of chemical constituents.</li> </ul> </li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Suspended loads	<ul style="list-style-type: none"> <li>• Do not swing excavator bucket over the heads of ground personnel.</li> <li>• ground personnel should not walk under suspended excavator buckets</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick (Sabino Hill Rake Tower)  
ACTIVITY HAZARD ANALYSIS – Excavation/Management of Lead Impacted Soil & Confirmation Sampling**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Excavation/Management of Lead Impacted Soil & Confirmation Sampling (Cont.)	High Ambient Temperature	<ul style="list-style-type: none"> <li>• Provide and drink fluids to prevent worker dehydration.</li> <li>• Minimize intake of caffeinated fluids.</li> <li>▪ Institute a proper work-break regiment in a cool area to avoid heat stress symptoms and overexertion.</li> <li>▪ Monitor for signs and symptoms of heat stress (maintain use of buddy system) when the ambient air temperature exceeds 70°F, the relative humidity is high (&gt;50 percent), or when workers exhibit symptoms of heat stress and especially when wearing disposable or other types of coveralls.               <ol style="list-style-type: none"> <li>1) Heat Syncope = Sluggishness or fainting while standing erect or immobile in heat. <i>Treatment = Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.</i></li> <li>2) Heat Rash = Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure. <i>Treatment = Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.</i></li> <li>3) Heat Cramps = Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours. <i>Treatment = Remove to cooler area. Rest lying down. Increase fluid intake.</i></li> <li>4) Heat exhaustion = Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low. <i>Treatment = Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.</i></li> <li>5) Heat Stroke = Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature. <i>Treatment = Cool rapidly by soaking in cool-but not cold-water. Call ambulance, and get medical attention immediately!</i></li> </ol> </li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Low Ambient Temperature	<ul style="list-style-type: none"> <li>• Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather.</li> <li>• Frequent intake of non-caffeinated fluids to maintain body core temperature.</li> <li>• Frequent intake of non- caffeinated to prevent dehydration.</li> <li>• Obtain and review weather forecast – be aware of predicted weather systems.</li> <li>• Observe one (buddy system) another for initial signs of cold-related disorders.</li> <li>• Frequent observance of Wind Chill Chart (HSP) to assist with work warming regiment determination and frostbite avoidance</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *

**AGVIQ-CH2MHILL Joint Venture (SBRAC) Task Order WE01, NAS Brunswick (Sabino Hill Rake Tower)  
ACTIVITY HAZARD ANALYSIS - Excavation/Management of Lead Impacted Soil & Confirmation Sampling**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Excavation/Management of Lead Impacted Soil & Confirmation Sampling (Cont.)	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>• Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet/steep slopes, stumps/roots, unprotected holes, ditches, rip rap, utilities, ground protrusions. Observe and avoid areas of unprotected holes, ramps and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Use sturdy hard toe work boots with sufficient ankle support.</li> <li>• Institute and maintain good housekeeping practices. Clean Work Areas as activities proceed. Clear/removed materials and debris from pathways and commonly traveled areas as soon as possible.</li> <li>• Use a sufficient amount of personnel (3) to cover waste stockpiles, use more as necessary in windy conditions.</li> <li>• Avoid walking on top of waste stockpiles that are covered in polyethylene sheeting or similar materials.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Stuck by/Pinched Caught in Between	<ul style="list-style-type: none"> <li>• Sufficient separation between ground support personnel and the operating heavy equipment must be maintained.</li> <li>• Wear reflective vests or high visibility clothing to promote visibility of ground personnel by equipment operators.</li> <li>• Isolate equipment swing areas from workers, fixed objects or other equipment. Ground personnel shall avoid positioning themselves between fixed objects, operating equipment. Make/maintain eye contact with operators before approaching equipment. Do not approach equipment from rear or from blind spot of operator. Stay out of the swing radius of operating heavy equipment.</li> <li>• Understand and review hand signals. Designate one person to provide hand signals to equipment operators performing lifting/hoisting operations.</li> <li>• Ensure equipment has operable back-up alarms.</li> <li>• Step away from heavy equipment when adjustments (positioning) are made.</li> <li>• Ensure heavy equipment operator has spotter for obstructed views and backing up.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP *
	Other	<ul style="list-style-type: none"> <li>▪ Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>▪ Shut down operations in heavy rain and lightning. Seek safe haven in a grounded structure or vehicle. Implement 30 - 30 rule.</li> <li>▪ Buddy System maintained for all phases of work.</li> <li>▪ Base or Local Emergency medical Service and Fire Dispatch numbers programmed into cellular phones. Have hospital route maps readily available.</li> <li>▪ Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.</li> </ul>	NA

EQUIPMENT REQUIRED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> <li>• Fire extinguisher (with fuel and electrical sources)</li> <li>• Eye wash (small portable type)</li> <li>• Miscellaneous power and manual hand tools.</li> <li>• First Aid/BbPK/CPR shield</li> <li>• Excavator, Haul trucks</li> <li>• Communication Devices</li> </ul>	<ul style="list-style-type: none"> <li>• Visual Inspections of designated work areas identify and address hazardous conditions.</li> <li>• Equipment inspections and maintenance.</li> <li>• Inspections of hand tools (power) and extension chords if used.</li> </ul>	<ul style="list-style-type: none"> <li>• Review AHA with all task personnel</li> <li>• Review Site Specific Health and Safety Plan for new site personnel.</li> <li>• 1<sup>st</sup> Aid/CPR (two people on-site)</li> <li>• Supervisors, SSHO - BBLPS, SC-HW (29CFR1910.120(e)(4) or equivalent, SCC (10 hr Construction Safety)</li> <li>• All - Training and medical surveillance in accordance 29CFR1910.120 (HAZWOPER) or 29CFR1910.134 (respiratory, as necessary)</li> <li>• Lead awareness training 29CFR1910.1025(l)/29CFR1926.62(l)</li> <li>• Heavy equipment operators qualified by previous training or experience.</li> <li>• Competent Person - Excavation</li> </ul>

PRINT

SIGNATURE

Supervisor Name:

\_\_\_\_\_

\_\_\_\_\_

Date/Time: \_\_\_\_\_

Safety Officer Name:

\_\_\_\_\_

\_\_\_\_\_

Date/Time: \_\_\_\_\_

Site Personnel:

\_\_\_\_\_

\_\_\_\_\_

Date/Time: \_\_\_\_\_

**AHA Prepared By:**

Glen Jackson  
AGVIQ, LLC.

Health & Safety Officer



**Attachment 8**  
**Pre-Task Safety Plan (Example Only)**

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EXAMPLE ONLY

**DAILY PRE-TASK SAFETY PLAN (PTSP)**

Page 1 of 3

Project: \_\_\_\_\_ Location: NAS Brunswick Site 26 Date: \_\_\_\_\_

Site Safety and Health Officer: \_\_\_\_\_ Job Activity: \_\_\_\_\_ Site #: \_\_\_\_\_

Task Personnel:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

List Tasks:

Well gauging and sampling

\_\_\_\_\_

\_\_\_\_\_

Tools/Equipment/Materials required (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools, cords, generators, compressed gases, regulated chemical products, etc.):

Generators, sampling equipment, coolers/glass ware

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Potential H&S Hazards, including chemical, physical, safety, biological and environmental (Check all that apply):**

<input checked="" type="checkbox"/> <b>Chemical burns/contact</b> Dermal protection (hands), eye protection. See HSP for PPE requirements per task.	<input type="checkbox"/> Trench, excavations, cave-ins	<input type="checkbox"/> Ergonomics
<input type="checkbox"/> Pressurized lines/equipment	<input checked="" type="checkbox"/> <b>Overexertion</b> Work/break regiment as dictated by task. Maintain fluid intake for hydration	<input checked="" type="checkbox"/> <b>Chemical splash</b> Use PPE in accordance with HSP. Protect hands from splash during decon. activities.
<input checked="" type="checkbox"/> <b>Thermal burns</b> Watch for warm engine/muffler components on generators.	<input type="checkbox"/> Pinch points	<input checked="" type="checkbox"/> <b>Poisonous plants/insects</b> Review HSP for identification of poisonous snakes in the geographic area. Long sleeves in areas where poison ivy, sumac or oak may exist. Use insect repellent. Tape pant legs to boots (ticks).
<input checked="" type="checkbox"/> <b>Electrical</b> GCF Is for generators, Inspect and protect extension cords, Cords rated for use and have 3" wire grounding	<input checked="" type="checkbox"/> <b>Cuts/abrasions</b> Do not use razor knives. Cut away from body. Identify and avoid rusty/jagged or sharp surfaces from aboveground features (brush, pipe chases/supports, utility structures, doors)	<input checked="" type="checkbox"/> <b>Eye hazards/flying projectile</b> Use eye protection at all times. Ensure head protection is used in areas where heavy brush, trees, thorns, vines exist when accessing well heads.
<input checked="" type="checkbox"/> <b>Weather conditions</b> Foul and cold weather clothing as dictated by expected conditions	<input checked="" type="checkbox"/> <b>Spills</b> Use funnels and nozzles during fueling of generators.	<input type="checkbox"/> Inhalation hazard
<input type="checkbox"/> Heights/fall > 6'	<input type="checkbox"/> Overhead Electrical hazards	<input checked="" type="checkbox"/> <b>Heat/cold stress</b> Work/break regiment as dictated by heat exposure Provide sufficient fluids for employee intake. Recommended employees begin with 16 oz. of water before initiating field work.
<input checked="" type="checkbox"/> <b>Noise</b> Use hearing protection in loud work environments	<input type="checkbox"/> Elevated loads	<input type="checkbox"/> Water/drowning hazard
<input checked="" type="checkbox"/> <b>Explosion/fire</b> Metal safety cans for fuel storage, No open flame, sparks ignition in hazardous/flammable/combustible storage areas. Let engine surfaces cool before fueling.	<input checked="" type="checkbox"/> <b>Slips, trip and falls</b> Exercise good general house keeping practices Identify/remove slip/trip falls hazards in work area. Watch for and avoid holes, ground protrusions. Watch for entanglement of feet around vines and brush.	<input type="checkbox"/> Heavy equipment
<input checked="" type="checkbox"/> <b>Radiation</b> Solar. UV protection on skin and UV eye protection. ANSI rated safety eye protection only.	<input checked="" type="checkbox"/> <b>Manual lifting</b> >50 lbs or awkward loads, get assistance. If employee not capable of lifting 40 lbs. seek assistance.	<input type="checkbox"/> Aerial lifts/platforms
<input type="checkbox"/> Confined space entry	<input type="checkbox"/> Welding/cutting	<input type="checkbox"/> Demolition

**Continue on page 3 of 3 (if necessary)**

**Hazard Control Measures (Check all that apply):**

<p><b>PPE</b></p> <p><input checked="" type="checkbox"/> Head protection</p> <p><input type="checkbox"/> Face protection</p> <p><input checked="" type="checkbox"/> Hard toe work boots</p> <p><input type="checkbox"/> Thermal/lined</p> <p><input checked="" type="checkbox"/> Eye</p> <p><input checked="" type="checkbox"/> Dermal/hand</p> <p><input type="checkbox"/> Hearing</p> <p><input type="checkbox"/> Respiratory</p> <p><input checked="" type="checkbox"/> Reflective vests</p>	<p><b>Protective Systems</b></p> <p><input type="checkbox"/> Locate buried utilities</p> <p><input type="checkbox"/> Competent person</p> <p><input type="checkbox"/> Daily inspections</p> <p><input type="checkbox"/> Sloping</p> <p><input type="checkbox"/> Shoring</p> <p><input type="checkbox"/> Trench box</p> <p><input type="checkbox"/> Barricades</p>	<p><b>Fire Protection</b></p> <p><input type="checkbox"/> Fire extinguishers</p> <p><input type="checkbox"/> Fire watch</p> <p><input type="checkbox"/> Non-spark tools</p> <p><input type="checkbox"/> Grounding/bonding</p> <p><input type="checkbox"/> Intrinsically safe equipment</p> <p><input type="checkbox"/> Combustible materials storage</p> <p><input type="checkbox"/> Chemical Storage</p>	<p><b>Electrical</b></p> <p><input type="checkbox"/> Lockout/tagout</p> <p><input type="checkbox"/> Grounded</p> <p><input type="checkbox"/> Panels covered</p> <p><input checked="" type="checkbox"/> GFCI/extension cords</p> <p><input type="checkbox"/> Power tools/cord inspected</p> <p><input type="checkbox"/> Insulated tools/gloves</p>
<p><b>Fall Protection</b></p> <p><input type="checkbox"/> Harness/lanyards</p> <p><input type="checkbox"/> Adequate anchorage</p> <p><input type="checkbox"/> Guardrail system</p> <p><input type="checkbox"/> Covered opening</p> <p><input type="checkbox"/> Fixed barricades</p> <p><input type="checkbox"/> Warning system</p>	<p><b>Air Monitoring</b></p> <p><input type="checkbox"/> PID/FID</p> <p><input type="checkbox"/> Detector tubes</p> <p><input type="checkbox"/> Radiation</p> <p><input type="checkbox"/> Personnel sampling</p> <p><input type="checkbox"/> LEL/O2</p> <p><input type="checkbox"/> Other</p>	<p><b>Proper Equipment</b></p> <p><input type="checkbox"/> Aerial lift/ladders/scaffolds</p> <p><input type="checkbox"/> Forklift/ heavy equipment</p> <p><input type="checkbox"/> Backup alarms</p> <p><input type="checkbox"/> Hand/power tools</p> <p><input type="checkbox"/> Crane w/current inspection</p> <p><input type="checkbox"/> Proper rigging</p> <p><input type="checkbox"/> Operator qualified</p>	<p><b>Welding and Cutting</b></p> <p><input type="checkbox"/> Cylinders secured/capped</p> <p><input type="checkbox"/> Cylinders separated/upright</p> <p><input type="checkbox"/> Flash-back arrestors</p> <p><input type="checkbox"/> No cylinders in CSE</p> <p><input type="checkbox"/> Flame retardant clothing</p> <p><input type="checkbox"/> Appropriate goggles</p>
<p><b>Confined Space Entry</b></p> <p><input type="checkbox"/> Isolation</p> <p><input type="checkbox"/> Air monitoring</p> <p><input type="checkbox"/> Trained personnel</p> <p><input type="checkbox"/> Permit completed</p> <p><input type="checkbox"/> Rescue provisions</p>	<p><b>Medical/Emerg. Response</b></p> <p><input checked="" type="checkbox"/> First-aid and BBP kit</p> <p><input checked="" type="checkbox"/> Eye wash</p> <p><input checked="" type="checkbox"/> FA-CPR training</p> <p><input checked="" type="checkbox"/> Route to hospital</p>	<p><b>Heat/Cold Stress</b></p> <p><input checked="" type="checkbox"/> Work/rest regime</p> <p><input checked="" type="checkbox"/> Rest area</p> <p><input checked="" type="checkbox"/> Liquids available</p> <p><input checked="" type="checkbox"/> Monitoring</p> <p><input type="checkbox"/> Training</p>	<p><b>Vehicle/Traffic</b></p> <p><input type="checkbox"/> Traffic Awareness</p> <p><input type="checkbox"/> Traffic control</p> <p><input type="checkbox"/> Barricades</p> <p><input type="checkbox"/> Flags</p> <p><input type="checkbox"/> Signs</p>
<p><b>Permits</b></p> <p><input type="checkbox"/> Hot work</p> <p><input type="checkbox"/> Confined space</p> <p><input type="checkbox"/> Lockout/tagout</p> <p><input type="checkbox"/> Excavation</p> <p><input type="checkbox"/> Demolition</p> <p><input type="checkbox"/> Energized work</p> <p><input type="checkbox"/> Local/Environmental</p>	<p><b>Demolition</b></p> <p><input type="checkbox"/> Pre-demolition survey</p> <p><input type="checkbox"/> Structure condition</p> <p><input type="checkbox"/> Isolate area/utilities</p> <p><input type="checkbox"/> Competent person</p> <p><input type="checkbox"/> Hazmat present</p>	<p><b>Inspections</b></p> <p><input type="checkbox"/> Ladders/aerial lifts</p> <p><input type="checkbox"/> Lanyards/harness</p> <p><input type="checkbox"/> Scaffolds</p> <p><input type="checkbox"/> Heavy equipment</p> <p><input type="checkbox"/> Cranes and rigging</p> <p><input type="checkbox"/> Other per Field Safety Plan</p>	<p><b>Training</b></p> <p><input checked="" type="checkbox"/> Hazwaste</p> <p><input type="checkbox"/> Construction</p> <p><input type="checkbox"/> Equipment</p> <p><input type="checkbox"/> Competent person</p> <p><input checked="" type="checkbox"/> Task-specific (AHA)</p> <p><input checked="" type="checkbox"/> Hazcom</p>

FieldNotes: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



**Attachment 9**  
**Loss Prevention Observation (LPO) Form**

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<b>Loss Prevention Observation Form</b>		
Project:	Observer:	
Position/Title of worker observed:	Background Information/comments:	
Task/Observation Observed:		Date:

- Identify and reinforce safe work practices/behaviors
- Identify and improve on at-risk practices/acts
- Identify and improve on practices, conditions, controls, and compliance that eliminate or reduce hazards
- Proactive PM/Site Manager support facilitates eliminating/reducing hazards (material/personnel resources)
- Positive, corrective, cooperative, collaborative feedback/recommendations

Actions & Behaviors	Consistent w/ H&S Program	Not Consistent w/ H&S Program	Observations/Comments
Current & accurate Pre-Task Planning/Briefing (Project safety plan, AHA, PTSP, tailgate briefing, c., as needed)			<b>Positive Work Practices Observed:</b>
Personnel properly trained/qualified/experienced			
Tools/equipment available and adequate			
Proper use of tools			<b>Questionable Activity/Condition Observed:</b>
Barricades/work zone control			
Housekeeping			
Communication			
Work Approach/Habits			
Attitude			<b>Actions/Comments:</b>
Focus/attentiveness			
Pace			
Uncomfortable position			
Inconvenient location			
Position/Line of fire			
Apparel (hair, loose clothing, jewelry)			<b>Observed Worker's Corrective Actions/Comments:</b>
Repetitive motion			
Other...			

Attachment 10  
Loss/Near Loss Incident Report Form

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# Incident Report Form

### **Type of Incident** (Select at least one)

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Injury/Illness             | <input type="checkbox"/> Property Damage | <input type="checkbox"/> Spill/Release |
| <input type="checkbox"/> Environmental/Permit Issue | <input type="checkbox"/> Near Miss       | <input type="checkbox"/> Other         |

### **General Information** (Complete for all incident types)

Preparer's Name: \_\_\_\_\_ Preparer's Employee Number: \_\_\_\_\_  
 Date of Report: \_\_\_\_\_ Date of Incident: \_\_\_\_\_ Time of Incident: \_\_\_\_\_ am/pm

### **Type of Activity** (Provide activity being performed that resulted in the incident)

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> Asbestos Work                     | <input type="checkbox"/> Excavation Trench-Haz Waste | <input type="checkbox"/> Other (Specify) _____     |
| <input type="checkbox"/> Confined Space Entry              | <input type="checkbox"/> Excavation Trench-Non Haz   | <input type="checkbox"/> Process Safety Management |
| <input type="checkbox"/> Construction Mgmt- Haz Waste      | <input type="checkbox"/> Facility Walk Through       | <input type="checkbox"/> Tunneling                 |
| <input type="checkbox"/> Construction Mgmt - Non-Haz Waste | <input type="checkbox"/> General Office Work         | <input type="checkbox"/> Welding                   |
| <input type="checkbox"/> Demolition                        | <input type="checkbox"/> Keyboard Work               | <input type="checkbox"/> Wetlands Survey           |
| <input type="checkbox"/> Drilling-Haz Waste                | <input type="checkbox"/> Laboratory                  | <input type="checkbox"/> Working from Heights      |
| <input type="checkbox"/> Drilling-Non Haz Waste            | <input type="checkbox"/> Lead Abatement              | <input type="checkbox"/> Working in Roadways       |
| <input type="checkbox"/> Drum Handling                     | <input type="checkbox"/> Motor Vehicle Operation     | <input type="checkbox"/> WWTP Operation            |
| <input type="checkbox"/> Electrical Work                   | <input type="checkbox"/> Moving Heavy Object         |  |

### **Location of Incident** (Select one)

- Company Premises (identify location): \_\_\_\_\_  
 Field (Project #: \_\_\_\_\_ Project/Site Name: \_\_\_\_\_ Client: \_\_\_\_\_)  
 In Transit (Traveling from: \_\_\_\_\_ Traveling to: \_\_\_\_\_)  
 At Home

### **Geographic Location of Incident** (Select region where the incident occurred)

- |                                    |                                    |   |
|------------------------------------|------------------------------------|---|
| <input type="checkbox"/> Northeast | <input type="checkbox"/> Southwest | <input type="checkbox"/> Asia Pacific       |
| <input type="checkbox"/> Southeast | <input type="checkbox"/> Corporate | <input type="checkbox"/> Europe Middle East |
| <input type="checkbox"/> Northwest | <input type="checkbox"/> Canadian  | <input type="checkbox"/> Latin America      |

If an AGVIQ-CH2M HILL subcontractor was involved in the incident, provide their company name and phone number: \_\_\_\_\_

Describe the Incident (Provide a brief description of the incident): \_\_\_\_\_

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### **Injured Employee Data** (Complete for Injury/Illness incidents only)

If AGVIQ-CH2M HILL employee injured

Employee Name: \_\_\_\_\_ Employee Number: \_\_\_\_\_

If AGVIQ-CH2M HILL Subcontractor employee injured

Employee Name: \_\_\_\_\_ Company: \_\_\_\_\_

### Injury Type

- Allergic Reaction
- Amputation
- Asphyxia
- Bruise/Contusion/Abrasion
- Burn (Chemical)
- Burn/Scald (Heat)
- Cancer
- Carpal Tunnel
- Concussion
- Cut/Laceration
- Dermatitis
- Dislocation

- Electric Shock
- Foreign Body in eye
- Fracture
- Freezing/Frost Bite
- Headache
- Hearing Loss
- Heat Exhaustion
- Hernia
- Infection
- Irritation to eye
- Ligament Damage

Multiple (Specify) \_\_\_\_\_

- Muscle Spasms
- Other (Specify) \_\_\_\_\_

- Poisoning (Systemic)
- Puncture
- Radiation Effects
- Strain/Sprain
- Tendonitis
- Wrist Pain

### Part of Body Injured

- Abdomen
- Ankle(s)
- Arms (Multiple)
- Back
- Blood
- Body System
- Buttocks
- Chest/Ribs
- Ear(s)
- Elbow(s)
- Eye(s)
- Face
- Finger(s)

- Foot/Feet
- Hand(s)
- Head
- Hip(s)
- Kidney
- Knee(s)
- Leg(s)
- Liver
- Lower (arms)
- Lower (legs)
- Lung
- Mind

Multiple (Specify) \_\_\_\_\_

- Neck
- Nervous System
- Nose
- Other (Specify) \_\_\_\_\_

- Reproductive System
- Shoulder(s)
- Throat
- Toe(s)
- Upper Arm(s)
- Upper Leg(s)
- Wrist(s)

### Nature of Injury

- Absorption
- Bite/Sting/Scratch
- Cardio-Vascular/Respiratory System Failure
- Caught In or Between
- Fall (From Elevation)
- Fall (Same Level)
- Ingestion

- Inhalation
- Lifting
- Mental Stress
- Motor Vehicle Accident
- Multiple (Specify) \_\_\_\_\_

Other (Specify) \_\_\_\_\_

- Overexertion
- Repeated Motion/Pressure
- Rubbed/Abraded
- Shock
- Struck Against
- Struck By
- Workplace Violence

• Initial Diagnosis/Treatment Date: \_\_\_\_\_

### Type of Treatment

- Admission to hospital/medical facility
- Application of bandages
- Cold/Heat Compression/Multiple Treatment
- Cold/Heat Compression/One Treatment
- First Degree Burn Treatment
- Heat Therapy/Multiple treatment
- Multiple (Specify) \_\_\_\_\_

- Heat Therapy/One Treatment
- Non-Prescriptive medicine
- None
- Observation
- Other (Specify) \_\_\_\_\_

- Prescription- Multiple dose
- Prescription- Single dose
- Removal of foreign bodies
- Skin Removal
- Soaking therapy- Multiple Treatment
- Soaking Therapy- One Treatment

- Stitches/Sutures
- Tetanus
- Treatment for infection
- Treatment of 2<sup>nd</sup> /3<sup>rd</sup> degree burns
- Use of Antiseptics - multiple treatment
- Use of Antiseptics - single treatment
- Whirlpool bath therapy/multiple treatment
- Whirlpool therapy/single treatment
- X-rays negative
- X-rays positive/treatment of fracture

Number of days doctor required employee to be off work: \_\_\_\_\_  
Number of days doctor restricted employee's work activity: \_\_\_\_\_  
Equipment Malfunction: Yes  No  Activity was a Routine Task: Yes  No   
Describe how you may have prevented this injury:

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Physician Information

Hospital Information

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_  
Zip Code: \_\_\_\_\_  
Phone: \_\_\_\_\_

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_  
Zip Code: \_\_\_\_\_  
Phone: \_\_\_\_\_

**Property Damage** (Complete for Property Damage incidents only)

Property Damaged: \_\_\_\_\_ Property Owner: \_\_\_\_\_  
Damage Description: \_\_\_\_\_  
Estimated Amount: \$ \_\_\_\_\_

**Spill or Release** (Complete for Spill/Release incidents only)

Substance (attach MSDS): \_\_\_\_\_ Estimated Quantity: \_\_\_\_\_  
Facility Name, Address, Phone No.: \_\_\_\_\_

Did the spill/release move off the property where work was performed?: \_\_\_\_\_  
Spill/Release From: \_\_\_\_\_ Spill/Release To: \_\_\_\_\_

**Environmental/Permit Issue** (Complete for Environmental/Permit Issue incidents only)

Describe Environmental or Permit Issue:

Permit Type: \_\_\_\_\_

Permitted Level or Criteria (e.g., discharge limit): \_\_\_\_\_

Permit Name and Number (e.g., NPDES No. ST1234): \_\_\_\_\_

Substance and Estimated Quantity: \_\_\_\_\_

Duration of Permit Exceedence: \_\_\_\_\_

**Verbal Notification** (Complete for all incident types)(Provide names, dates and times)

AGVIQ-CH2M HILL Personnel Notified:

Client Notified: \_\_\_\_\_  
\_\_\_\_\_

## Root Cause Investigation

This attachment is provided to assist in accessing, completing, and reviewing an incident investigation. It is important to remember the following when conducting an investigation:

Gather relevant facts, focusing on fact-finding, not fault-finding.  
Draw conclusions, pitting facts together into a probable scenario.  
Determine incident root cause(s), the basic causes why an unsafe act/condition existed.  
Develop and implement solutions, matching all identified root causes with solutions.

### Documentation

The following should be included in the IRF to document the incident.

### Description

Provide a description of the event and the sequence of events and actions that took place prior to the incident. Start with the incident event and work backwards in time through all the preceding events that directly contributed to the incident. The information should identify why the event took place, who was involved, when and where the event took place, and what actions were taken.

### Cause Analysis

Using the form and flowchart in this attachment, the root cause of the incident will be determined. This form must be retained in the project and/or regional HS&E files.

**Immediate Causes**—List the substandard actions or conditions that directly affected the incident. The following are examples of immediate causes:

**Substandard Actions:** Operating equipment without authority; failure to warn; failure to secure; operating at improper speed; making safety device inoperable; using defective equipment; failing to use PPE; improper loading; improper lifting; improper position for task; under influence of alcohol or drugs; horseplay.

**Substandard Conditions:** Exposure to hazardous materials; exposure to extreme temperatures; improper lighting; improper ventilation; congestion; exposure to fire and explosive hazard; defective tools, equipment or materials; exposure to extreme noise; poor ventilation; poor visibility; poor housekeeping.

**Basic Causes**—List the personal and job factors that caused the incident. The following are examples of basic causes:

**Personal Factors:** Capability; knowledge; skill; stress; motivation.

**Job Factors:** Abuse or misuse; engineering; maintenance; purchasing; supervision; tools and equipment; wear and tear; work standards.

### Corrective Action Plan

Include all corrective actions taken or those that should be taken to prevent recurrence of the incident. Include the specific actions to be taken, the employer and personnel responsible for implementing the actions, and a time frame for completion. Be sure the corrective actions address the causes. For example, training may prevent recurrence of an incident caused by a lack of knowledge, but it may not help an incident caused by improper motivation.

The following are examples of management programs that may be used to control future incidents. These programs should be considered when determining specific corrective actions.

**Management Programs:** Accident/incident analysis; emergency preparedness; engineering controls; general promotion; group meetings; health control; hiring and placement; leadership and administration; management training; organizational rules; personal protective equipment; planned inspections; program audits; program controls; purchasing controls; task analysis and procedures; task observation.



Describe how this incident may have been prevented:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Contributing Factors (Describe in detail why incident occurred):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date employer notified of incident: \_\_\_\_\_ To whom reported: \_\_\_\_\_

**Witness Information (First Witness)**

Name: \_\_\_\_\_  
Employee Number \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_  
Zip Code: \_\_\_\_\_  
Phone: \_\_\_\_\_

**Witness Information (Second Witness)**

Name: \_\_\_\_\_  
Employee Number \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_  
Zip Code: \_\_\_\_\_  
Phone: \_\_\_\_\_

Additional information or comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

---

**A ROOT CAUSE ANALYSIS FORM MUST BE COMPLETED FOR ALL INJURIES AND ILLNESSES OR ACTUAL LOSSES.**

**COMPLETION OF THE ROOT CAUSE ANALYSIS FORM FOR NEAR LOSSES IS OPTIONAL, AT THE DISCRETION OF THE HEALTH AND SAFETY MANAGER.**

**Determination of Root Cause(s)**

For losses or near losses, the information may be gathered by the supervisor or other personnel immediately following the loss or near loss. Based on the complexity of the situation, this information may be all that is necessary to enable the investigation team to analyze the loss, to determine the root cause, and to develop recommendations. More complex situations may require the investigation team to revisit the loss site or re-interview key witnesses to obtain answers to questions that may arise during the investigation process.

Photographs or videotapes of the scene and damaged equipment should be taken from all sides and from various distances. This point is especially important when the investigation team will not be able to review the loss scene.

The investigation team must use the Root Cause Analysis Flow Chart to assist in identifying the root cause(s) of a loss. Any loss may have one or more “root causes” and “contributing factors”. The root cause is the primary or immediate cause of the incident, while a contributing factor is a condition or event that contributes to the incident happening, but is not the primary cause of the incident. Root causes and contributing factors that relate to the *person* involved in the loss, his or her peers, or the supervisor should be referred to as “personal factors”. Causes that pertain to the *system* within which the loss or injury occurred should be referred to as “job factors”.

#### Personal Factors

1. Lack of skill or knowledge, lack of motivation
2. Correct way takes more time and/or requires more effort
3. Short-cutting standard procedures is positively reinforced or tolerated
4. Person thinks there is no personal benefit to always doing the job according to standards

#### Job Factors

5. Lack of or inadequate operational procedures or work standards.
6. Inadequate communication of expectations regarding procedures or standards
7. Inadequate tools or equipment

#### Other

8. Uncontrollable Factors \*

The root cause(s) could be any one or a combination of these seven possibilities or some other “uncontrollable factor”. In the vast majority of losses, the root cause is very much related to one or more of these seven factors. \* **Uncontrollable factors should be used rarely and only after a thorough review eliminates all seven other factors.**

# Root Cause Analysis Form

## Root Cause Analysis (RCA)

Root Cause Categories (RCC): Select the RCC numbered below that applies for the root cause (RC) and/or contributing factor (CF) in the first column, then describe the specific root cause and corrective actions in each column.

1. Lack of skill or knowledge
2. Lack of or inadequate operational procedures or work standards
3. Inadequate communication of expectations regarding procedures or work standards
4. Inadequate tools or equipment
5. Correct way takes more time and/or requires more effort
6. Short-cutting standard procedures is positively reinforced or tolerated
7. Person thinks there is no personal benefit to always doing the job according to standards
8. Uncontrollable Factor (Note: Uncontrollable factors should be used rarely and only after a thorough review eliminates all seven other factors.)

RCC #	Root Cause(s)	Corrective Actions	RC <sup>1</sup>	CF <sup>2</sup>	Due Date	Completion Date	Date Verified

<sup>1</sup> RC = Root Cause; <sup>2</sup> CF = Contributing Factors (check which applies)

## Investigation Team Members

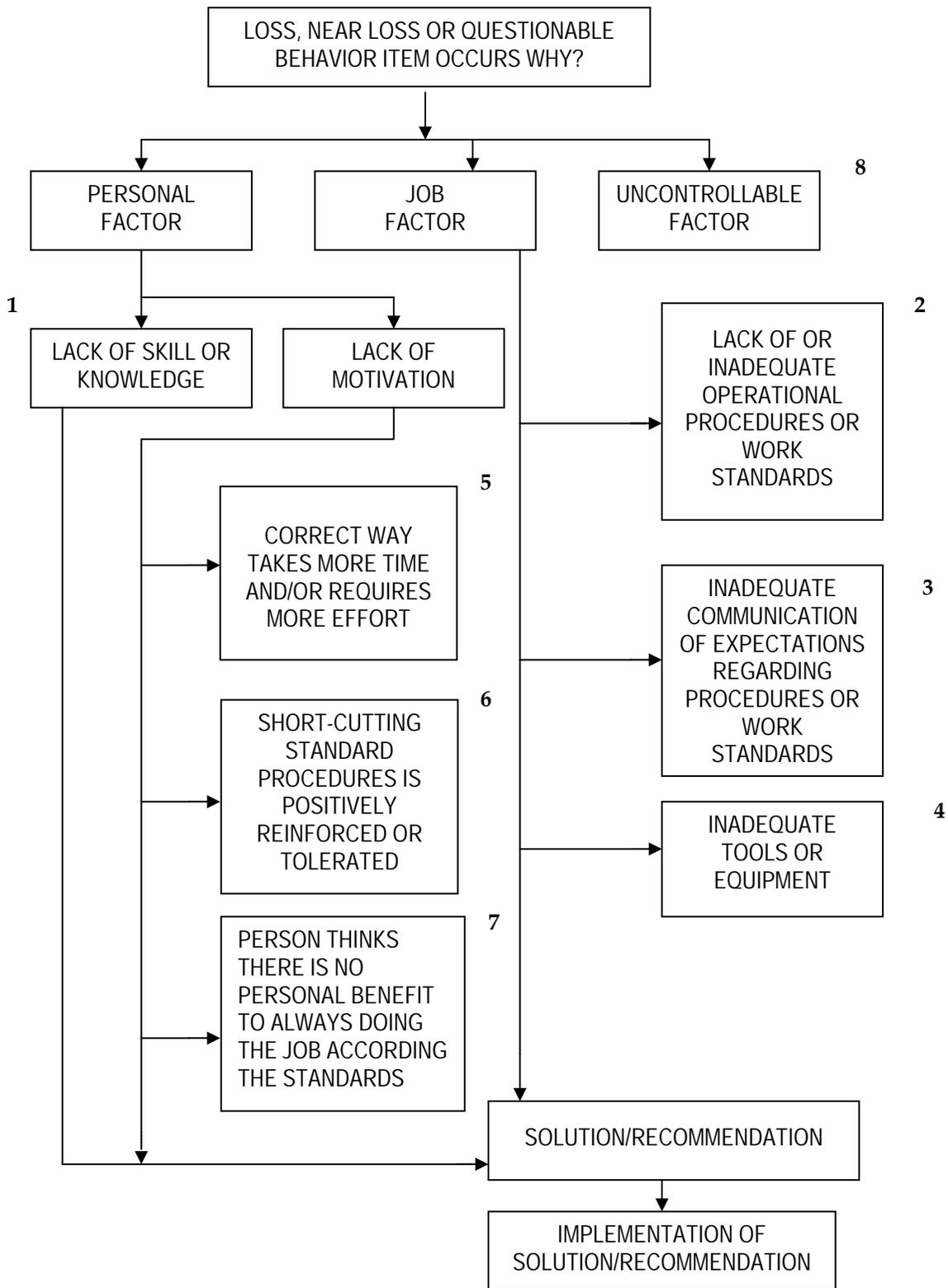
Name	Job Title	Date

## Results of Solution Verification and Validation


## Reviewed By

Name	Job Title	Date

# Root Cause Analysis Flow Chart



Attachment 11  
Emergency Contact List

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# Emergency Contact List

**24-hour CH2M HILL Serious Incident Reporting Contact/Pager: 720-286-4911**  
**CH2M HILL 24-hour Nurse Number: 866-893-2514**  
 (See attached instructions \*)

<p><b>Local Brunswick Medical/Fire/Police Emergency 911</b></p>	<p><b>CH2M HIL- Medical Consultant</b>          WorkCare          Dr. Peter Greaney M.D.          300 S. Harbor Blvd, Suite 600          Anaheim , CA 92805          800-455-6155          714-978-7488          (After hours calls will be returned within 20 minutes)  <b>AGVIQ Medical Consultant(s)</b>          Refer to AQVIQ VBO office for a detailed list of Medical Facilities/contacts.</p>
<p><b>AGVIQ-CH2M HILL Program Manager</b>          Name: Sidney Allison AGVIQ          Phone 843-242-8018 (o); 843-813-2672 (cell)</p>	<p><b>AGVIQ-CH2M HILL Deputy Program Manager</b>          Name: Michael Halil CH2M HILL – (JXO)          Phone: 904-777-4812 x 233/904-219-6277 (cell))  <b>AGVIQ-CH2M HILL Project Manager</b>          Name: Venky Venkatesh – CH2MHILL (DAY)          Phone: 215-640-9391 / 216-235-8613 (cell)</p>
<p><b>AGVIQ Corporate Human Resources Department</b>          Name: Nichola Ruedy          TIKIGAQ Corp. Anchorage, AK          Phone: (907) 365-6129 / (907) 230-1567 cell</p>	<p><b>CH2M HILL Corporate Human Resources Department</b>          Name: Pete Hannon, DEN          Phone: 303-771-0900</p>
<p><b>AGVIQ-CH2M HILL Site Supervisor/Alternate SSHO</b>          Name: Rob Lychalk - AGVIQ          Cell Phone: (757) 544 0524 (cell)</p> <p><b>AGVIQ-CH2M HILL HSPA/ SHSO (alternate)</b>          Name: Glen Jackson - AGVIQ          Cell Phone: (757) 644 8293 (cell) /(757) 318 9420 X 12</p>	<p><b>AGVIQ-CH2M HILL CIH</b>          Name: Angelo Liberatore, CH2M HILL Constructors, Inc. (ATL)          Phone: (678) 530-4210/(770) 335-2076 (cell)</p> <p><b>AGVIQ-CH2M HILL HSPA</b>          Name: Mark Orman, CH2M HILL Constructors, Inc. (MKE)          Phone: (414) 847-0597 / (414) 712-4138 (Cell)</p> <p><b>AGVIQ-CH2M HILL SHSO (primary)</b>          Name: Will Knox CH2M HILL Constructors, Inc. (ATL)          Phone: 757-671-6280 / 336-457-3094 (cell)</p> <p><b>AGVIQ-CH2M HILL SHSO (alternate)</b>          Name: Nathaniel Price, CH2MHILL (VBO)          Phone: 757-671-6280 / 336-457-3094 (cell)</p>
<p><b>AGVIQ Worker’s Compensation &amp; Auto Claims</b>          Name: Nichola Ruedy          TIKIGAQ Corp. Anchorage, AK          Phone: (907) 365-6129 / (907) 230-1567 cell          AGVIQ personnel to report all accidents or injuries to AGVIQ Corporate HSM or HSO immediately but no later than 24 hrs. Fatalities and hospitalizations shall require immediate notification to AGVIQ Corporate HSM.</p>	<p><b>CH2M HILL Worker’s Compensation &amp; Auto Claims</b>          Sterling Administration Services          Phone: 800/420-8926 After hours: 800/497-4566</p> <p>Report fatalities AND report vehicular accidents involving pedestrians, motorcycles, or more than two cars.          Fatalities and hospitalizations shall require immediate notification to JV CIH/HSPA.</p>
<p><b>AGVIQ Corporate HSM</b>          Name: Troy Izatt –          Office phone # (907) 365-6182          Cell phone # (907) 947-6851</p>	<p><b>Federal Express Dangerous Goods Shipping</b>          Phone: 800/238-5355  <b>Emergency Number for Shipping Dangerous Goods</b>          Phone: 800/255-3924</p>
<p>Contact the Project Manager. Generally, the Project Manager will contact relevant government agencies.</p>	
<p><b>Facility Alarms:</b>          Sound vehicle horn three times</p>	<p><b>Evacuation Assembly Area(s):</b>          Outside of club house, or local hotel where field team is staying</p>
<p><b>Facility/Site Evacuation Route(s):</b> Developed site specific on-site prior to start of work</p>	
<p><b>Hospital Name/Address:</b> See site Specific Hospital Route Maps for emergency contact information.</p>	

## \* Emergency Nurse Assistance Instructions (CH2M HILL personnel only)

- After informing their supervisor (AGVIQ-CH2M HILL Project Manager and/or AGVIQ-CH2M HILL Deputy Program Manager), the injured employee calls CH2M HILL's contracted Occupational Nurse.

### ***24-hour CH2M HILL Emergency Nurse Assistance***

***1-866-893-2514***

- The Occupational Injury Nurse listens to the injured employee to understand the injury/illness.
- Employee is provided guidance on appropriate treatment options (triage).
- If instructed to visit a medical facility by the Occupational Injury Nurse, the Supervisor is responsible for instructing the injured employee to take a copy of the **CH2M HILL Initial Medical Treatment Form (Attachment # 11– For Use by CH2M HILL Personnel Only)** with them to the physician, clinic or hospital.
- Appropriate treatment details are handled by the Occupational Injury Nurse, and Workers Compensation Groups.
- Nurse communicates and troubleshoots with and for employee through full recovery
- Upon any project incident (fire, spill, injury, near miss, death, etc.), immediately notify the AGVIQ-CH2M HILL PM (overall) and AGVIQ-CH2M HILL HSPA. Call emergency beeper number if HSM is unavailable.
- For work-related injuries or illnesses to CH2M HILL personnel, contact and help Human Resources administrator complete a HITS (Hours and Incident Tracking System) Form. HITS must be completed within 24 hours of incident.
- For AGVIQ-CH2M HILL subcontractor incidents, complete the Incident Report Form (IRF), Near Loss Investigation Report and Root Cause Analysis and submit to the AGVIQ-CH2M HILL PM and HSM.

*To be completed by CH2M HILL Supervisor – Send with employee visiting medical facility or forward within 24 hours.*

Employee name: \_\_\_\_\_ Date of Injury: \_\_\_\_\_  
Supervisor: \_\_\_\_\_ HS Representative: \_\_\_\_\_  
Visit Authorized by: \_\_\_\_\_ Phone #: \_\_\_\_\_

CH2M HILL Workers Compensation Administrator: Cambridge  
Send Bills to: CH2M HILL  
Attn: Jennifer Rindahl  
P.O. Box 22508  
Denver, Colorado 80222-0508

*To be completed by medical provider:*

Physician's name: \_\_\_\_\_ Phone #: \_\_\_\_\_  
Address: \_\_\_\_\_

CH2M HILL employee: \_\_\_\_\_ has been treated for: \_\_\_\_\_

**It is the policy of CH2M HILL to provide temporary modified duty whenever possible for employees with physical restrictions resulting from an occupational injury or illness.**

Released to full duty

Released to restricted duty only (list restrictions below)

Out of work until \_\_\_\_\_ (date)

Please list any physical restrictions:

\_\_\_\_\_

Expected duration of restricted duty?

\_\_\_\_\_

**CH2M HILL would like the best and most efficient care extended to all our employees. Please recommend over-the-counter (OTC) medication as a suitable alternative when medically feasible.**

Prescribed medication: \_\_\_\_\_

Recommended OTC alternative: \_\_\_\_\_

Date of follow-up appointment: \_\_\_\_\_

Physician's signature: \_\_\_\_\_ Date: \_\_\_\_\_

Please return this form to the injured employee and FAX to Health Resources at 1-800-853-2641. If you want to discuss the employee's work restrictions, please call the person listed in the "Visit Authorized by" field.

# Attachment 12

## Hurricane Preparedness Plan

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(Reserved)

# **Appendix B**

## **Quality Control Attachments**

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## Submittal Register

Contract Number: N62470-08-D-1006		TO No.: WE01			TO Title: NEX Site - NAS Brunswick					Location: Brunswick, ME			Contractor:			
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Spec Section	Item Description	Para. Number	Approving Authority	Other Reviewers	Submittal Number	Scheduled Submission Date	CCI Review Date	CCI Disposition	CCI Transmit Date	QC Admin Received Date	QC Disposition	QC Admin Transmit Date	Contracting Officer Received	Contracting Officer Disposition	Contracting Officer Return	Remarks
SD-01	<b>Data</b>															
	Work Plan (WMP, EPP, Quality Plan, Schedule, HSP)															
SD-	Environmental Survey															
SD-	Environmental Conditions Report															
SD-	Asbestos Abatement Plan (if needed)															
SD-																
SD-02	<b>Manufacturer's Catalog Data</b>															
SD-	Borrow Material Certification per source															
SD-																
SD-04	<b>Drawings</b>															
SD-	As-builts															
SD-	Sampling Maps															
SD-																
SD-09	<b>Reports</b>															
SD-	Laboratory Analytical Data															
SD-	Asbestos Personnel Air Sampling Data															
SD-	Asbestos Content															
SD-																
SD-12	<b>Field Test Reports</b>															
SD-	Air Monitoring Data															
SD-	Soil Headspace Screening Results															
SD-																
SD-13	<b>Certificates</b>															
SD-	Chemical Laboratory															
SD-	Geotechnical Laboratory															
SD-	Asbestos Sampler															
SD-																
SD-																
SD-18	<b>Records</b>															
SD-	Waste Manifests															
SD-	Certificate of Disposal/Recycling															
SD-	Instrument Calibration Data															
SD-	Waste Disposal Log															
SD-	Contractor Production Report															
SD-	Contract Quality Control Report															
SD-	Rework Items List															
SD-	Material Weight Tickets															
SD-	Seed Mix Design (Restoration)															
SD-	Photo Log															
SD-	Photographs															
SD-	Testing Plan and Log															

## Submittal Register

Contract Number: N62470-08-D-1006		TO No.: WE01			TO Title: NEX Site - NAS Brunswick					Location: Brunswick, ME			Contractor:			
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Spec Section	Item Description	Para. Number	Approving Authority	Other Reviewers	Submittal Number	Scheduled Submission Date	CCI Review Date	CCI Disposition	CCI Transmit Date	QC Admin Received Date	QC Disposition	QC Admin Transmit Date	Contracting Officer Received	Contracting Officer Disposition	Contracting Officer Return	Remarks
	SD- Monthly Summary of Field Tests															
	SD- Land Disposal Restriction Records															
	SD- Weight Tickets															
	SD- Meeting Minutes															
	SD- Navy Environmental Data Transfer Standards (NEDTS) Deliverables															
	SD- Laboratory Electronic Data Deliverables (EDDs) in NIRIS Electronic Data Deliverable (NEDD) Format															
	SD- Living CD															
	SD- Permits															
	SD- Emergency and Hazardous Chemical Inventory Forms															
	SD- Contractor and Subcontractor Personnel List															
	SD- MSDS Sheets															
	SD-															
	SD-															
	SD-															
	SD-20 <b>Closure Report</b>															
	SD- Project Completion Report															
	SD-															
	SD-															
	SD-															
	SD-21 <b>Sampling and Analysis Plan</b>															
	SD- Sample Log															
	SD-															





### TAB B

## Monthly Summary Report of Field Tests

<b>Start Date:</b>	<b>End Date:</b>	<b>Submittal Date:</b>	<b>Submitted By:</b>
<b>Contract Number:</b> N62467-01-D-0331	<b>CTO No.:</b>	<b>CTO Title:</b>	<b>Location:</b>
Type of Test Required	Date of Test	Reporting Laboratory	Test Results



**TAB A**  
**COORDINATION AND MUTUAL UNDERSTANDING MEETING MINUTES**

Meeting Date:		Prepared by:	
Meeting Location:		Date Prepared:	
Project Name/Location:		CTO No	
Project No.		Contract No:	
Task/Activity/Site:			
Attendees:			
Copies to:			

**Purpose:** The purpose of this meeting is to develop a mutual understanding of the QC details, including forms to be used; administration of on-site and off-site work; schedule and method for transmitting submittals; and coordination of CCI's management, production, and the Project QC Manager's duties with the Contracting Officer or designated representative.

\_\_\_\_\_

CH2M Hill Representative

\_\_\_\_\_

Date

\_\_\_\_\_

Navy CO or Designated Representative

\_\_\_\_\_

Date

**TAB B**  
**PRE-CONSTRUCTION MEETING AGENDA**  
**(with Subcontractors)**

- I. Introduction
  - A. Meeting attendees introduction
  - B. Purpose of the meeting
- II. Review of Scope of Project
  - A. Overview of base activities
  - B. Review CTO-specific scope of work
- III. Communications
  - A. Project communication links
    - 1. Offsite contacts
      - a. Operations
      - b. Accounts payable/accounts receivable
      - c. Subcontracts
    - 2. Onsite contacts
      - a. Site management
      - b. Quality control
      - c. Health and safety
    - 3. Communication
      - a. Timely and open
      - b. Confidentiality
- IV. Health and safety
  - A. Employee paperwork
  - B. Activity hazard analysis
  - C. Meetings
  - D. Conduct
  - E. Emergency procedures

V. Submittals

- A. Daily reports (CPR and CQCR)
- B. Monthly invoicing (DBA and schedule of values)
- C. Sampling / analytical records
- D. Testing reports
- E. Waste disposal packages (characterization data, profiles, manifest)
- F. Waste documentation (facility-signed manifests, weight tickets, certificates of disposal/destruction/recycling)

VI. Change Management

- A. Request for information
- B. Change in scope of work
- C. Change approval prior to initiating work
- D. Change in work plans

VII. Weekly Meetings

- A. Progress meetings
- B. QC meetings

VIII. Schedule

VIII. Operations

- A. Construction means and methods
- B. Personnel, equipment, resources



**TAB C**  
**PRE-CONSTRUCTION MEETING MINUTES**

Meeting Date:		Prepared by:	
Meeting Location:		Date Prepared:	
Project Name/Location:		CTO No	
Project No.		Contract No:	
Task/Activity/Site:			
Attendees:			
Copies to:			

**Purpose:** The purpose of this meeting is to ensure that all parties involved in the project understand and agree on the scope of work, schedule, submittal requirements, documentation requirements, change management processes and procedures, construction means and methods, reporting and communication requirements, health and safety requirements and protocols, etc.

CH2M Hill Representative	Title
Subcontractor's Representative	Company/Title



**TAB D**  
**TEAM CHARTERING MEETING MINUTES**

Meeting Date:		Prepared by:	
Meeting Location:		Date Prepared:	
Project Name/Location:		CTO No	
Project No.		Contract No:	
Task/Activity/Site:			
Attendees:			
Copies to:			

**Purpose:** The purpose of this meeting is to ensure that all parties understand each team member's roles and responsibilities, know the lines of communication, fully understand the scope of the project and how each member's actions affects the health and safety, quality, schedule and cost of the project, etc

CH2M Hill Representative	Title
Subcontractor's Representative	Company/Title



TAB C  
Photo Log

CTO Number	Project Number	Project Name	Site	Film Cassette Number	Photo Number	Date	Time	Task and Description	View Direction	Taken By
0056	175757	NAS Surrey	SWMU 5	5674747	1	10/15/2002	9:54	Excavation at Bldg 513	North	TRojas
0056	175757	NAS Surrey	SWMU 5	5674747	2	10/15/2002	9:55	Excavation at Bldg 513	East	TRojas
0056	175757	NAS Surrey	SWMU 5	5674747	3	10/15/2002	10:05	Excavation at Bldg 513	West	TRojas
0056	175757	NAS Surrey	SWMU 5	5674747	4	10/15/2002	10:30	Excavation at Bldg 513	South	TRojas
0056	175757	NAS Surrey	SWMU 5	5674747	5	10/20/2002	13:15	Backfill at Bldg 513	North	TRojas
0056	175757	NAS Surrey	SWMU 5	5674747	6	10/20/2002	13:30	Backfill at Bldg 513	East	TRojas
0056	175757	NAS Surrey	SWMU 5	5674747	7	10/20/2002	14:00	Backfill at Bldg 513	West	TRojas
0056	175757	NAS Surrey	SWMU 5	5674747	8	10/20/2002	14:15	Backfill at Bldg 513	South	TRojas





**PROJECT STATUS MEETING AGENDA/MINUTES**

---

Meeting Date:		Prepared by:	
Meeting Location:		Date Prepared:	
Project Name/Location:		TO No	
Project No.		Contract No:	
Task/Activity/Site:			
Attendees:			
Copies to:			

**Meeting Agenda**

1. Health and Safety Moment
2. Review previous meeting minutes
3. Review schedule
  - a) Work or testing accomplished since last meeting
  - b) Rework items identified since last meeting
  - c) Rework items completed since last meeting
4. Review status of submittals
  - a) Submittals reviewed and approved since last meeting
  - b) Submittals required in the near future
5. Review work to be accomplished in the next 2 weeks and documentation required
  - a) Establish completion dates for rework items
  - b) Inspections required
  - c) Testing required
  - d) Status of off-site work or testing
  - e) Documentation required
6. Resolve H&S, QC and production problems
7. Address items that may require revising the project plans, specifications, and drawings
  - a) Request for Information (RFI) status



## PROJECT STATUS MEETING AGENDA/MINUTES

---

### Minutes

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

SMALL BUSINESS RAC  	<b>PREPARATORY PHASE REPORT</b>	REPORT NO:	REPORT DATE: REVISION NO: REVISION DATE:
PROJECT NO:	DEFINABLE FEATURE OF WORK:	SITE/ACTIVITY:	
PERSONNEL PRESENT	_____		
	NAME	POSITION	COMPANY/GOVERNMENT
SUBMITTALS	REVIEW SUBMITTALS AND/OR SUBMITTAL REGISTER.	HAVE ALL SUBMITTALS BEEN APPROVED?      YES <input type="checkbox"/> NO <input type="checkbox"/>	
	IF NO, WHAT ITEMS HAVE NOT BEEN SUBMITTED?		
	ARE ALL MATERIALS ON HAND?      YES <input type="checkbox"/> NO <input type="checkbox"/>		
	IF NO, WHAT ITEMS ARE MISSING?		
CHECK APPROVED SUBMITTALS AGAINST DELIVERED MATERIAL. (THIS SHOULD BE DONE AS MATERIAL ARRIVES).			
COMMENTS:			
MATERIAL STORAGE	ARE MATERIALS STORED PROPERLY?      YES <input type="checkbox"/> NO <input type="checkbox"/>		
	IF NO, WHAT ACTION IS TAKEN?		
SPECIFICATIONS	REVIEW EACH PARAGRAPH OF SPECIFICATIONS.		
	DISCUSS PROCEDURE FOR ACCOMPLISHING THE WORK.		
	CLARIFY ANY DIFFERENCES.		
PRELIM WORK & PERMITS	ENSURE PRELIMINARY WORK IS CORRECT AND PERMITS ARE ON FILE.		
	IF NO, WHAT ACTION IS TAKEN?		





**Small Business RAC**  
**N62470-08-D-1006**

## CONTRACTOR PRODUCTION REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE OF REPORT:

REVISION NO:

REVISION DATE:

CTO NO:	PROJECT NAME/LOCATION:	REPORT NO:
PROJECT NO:	SUPERINTENDENT:	SITE H&S SPECIALIST:
AM WEATHER:	PM WEATHER:	MAX TEMP: F      MIN TEMP: F

### SUMMARY OF WORK PERFORMED TODAY

<b>JOB SAFETY</b>	Was A Job Safety Meeting Held This Date? <input type="checkbox"/> Yes <input type="checkbox"/> No	<b>TOTAL WORK HOURS ON JOB SITE THIS DATE</b> (Including Continuation Sheets)	
	Were there any lost-time accidents this date? (If Yes, attach copy of completed OSHA report) <input type="checkbox"/> Yes <input type="checkbox"/> No	CH2MHILL On-Site Hours	
	Was a Confined Space Entry Permit Administered This Date? (If Yes, attach copy of each permit) <input type="checkbox"/> Yes <input type="checkbox"/> No	AGVIQ On-Site Hours	
	Was Crane/Manlift/Trenching/Scaffold/HV Elec/High Work/Hazmat Work Done?? (If Yes, attach statement or checklist showing inspection performed) <input type="checkbox"/> Yes <input type="checkbox"/> No	Subcontractor On-Site Hours	
		<b>Total On-Site Hours This Date</b>	
	Was Hazardous Material/Waste Released into the Environment? (If Yes, attach description of incident and proposed action) <input type="checkbox"/> Yes <input type="checkbox"/> No	Cumulative Total of Work Hours From Previous Report	
Total Work Hours From Start of Construction			

**SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED** (Include Safety Violations, Corrective Instructions Given, Corrective Actions Taken, and Results of Safety Inspections Conducted):

EQUIPMENT/MATERIAL RECEIVED TODAY TO BE INCORPORATED IN JOB				
DESCRIPTION OF EQUIPMENT/MATERIAL RECEIVED	MAKE/ MODEL/ MANUFACTURER	EQUIPMENT/ LOT NUMBER	INSPECTION PERFORMED BY	NUMBER/ VOLUME/ WEIGHT

EQUIPMENT USED ON JOB SITE TODAY.					
EQUIPMENT DESCRIPTION	EQUIPMENT MAKE/MODEL	SAFETY CHECK PERFORMED BY	NUMBER OF HOURS		
			USED	IDLE	REPAIR

**CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED** (List any conflicts with the delivery order [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.):

**VISITORS TO THE SITE:**

**LIST OF ATTACHMENTS** (OSHA report, confined space entry permit, incident reports, etc.):

**SAFETY REQUIREMENTS HAVE BEEN MET**   

\_\_\_\_\_

SUPERINTENDENT'S SIGNATURE

\_\_\_\_\_

DATE





**Small Business RAC**  
**N62470-08-D-1006**

## CONTRACTOR QUALITY CONTROL REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

REPORT DATE:  
 REVISION NO:  
 REVISION DATE:

CTO NO:	PROJECT NAME/LOCATION:	REPORT NO:
PROJECT NO:	PROJECT QC MANAGER:	SITE H&S SPECIALIST:

**SAFETY MEETINGS AND INSPECTIONS**

WAS A SAFETY MEETING HELD THIS DAY?     YES     NO    IF YES, ATTACH SAFETY MEETING MINUTES  
 WAS CRANE USED ON THE SITE THIS DAY?     YES     NO    IF YES, ATTACH DAILY CRANE REPORT OF INSPECTION AND CONTRACTOR CRANE OPERATION CHECKLIST

**DEFINABLE FEATURES OF WORK STATUS**

DFOW No.	Definable Feature Of Work	Preparatory	Initial	Follow-Up
1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>PREPARATORY</b>	WAS PREPARATORY PHASE WORK PERFORMED TODAY? <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, FILL OUT AND ATTACH SUPPLEMENTAL PREPARATORY PHASE CHECKLIST.		
	DFOW No.(from list above).	TASK/ACTIVITY	PREPARATORY PHASE REPORT NO.

**INITIAL AND FOLLOW-UP FEATURE OF WORK COMMENTS**

DFOW No.(from list above)	Phase	Comment/Finding/Action
	Initial <input type="checkbox"/>	
	Follow up <input type="checkbox"/>	
	Initial <input type="checkbox"/>	
	Follow up <input type="checkbox"/>	
	Initial <input type="checkbox"/>	
	Follow up <input type="checkbox"/>	
	Initial <input type="checkbox"/>	
	Follow up <input type="checkbox"/>	
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	Follow up <input type="checkbox"/>	
	Initial <input type="checkbox"/>	
	Follow up <input type="checkbox"/>	
	Initial <input type="checkbox"/>	
	Follow up <input type="checkbox"/>	

REWORK ITEMS IDENTIFIED TODAY (NOT CORRECTED BY CLOSE OF BUSINESS)			REWORK ITEMS CORRECTED TODAY (FROM REWORK ITEMS LIST)	
TASK/ACTIVITY	DATE ISSUED	DESCRIPTION	TASK/ACTIVITY	CORRECTIVE ACTION(S) TAKEN

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<b>AGVIQ-CH2M HILL</b> Small Business RAC N62470-08-D-1006	<b>CONTRACTOR QUALITY CONTROL REPORT</b> (ATTACH ADDITIONAL SHEETS IF NECESSARY)	REPORT DATE: REVISION NO: REVISION DATE:
--	---	--

CTO NO:	PROJECT NAME/LOCATION:	REPORT NO:
PROJECT NO:	PROJECT QC MANAGER:	SITE H&S SPECIALIST:

SAMPLING/TESTING PERFORMED		
SAMPLING/TESTING PERFORMED	SAMPLING/TESTING COMPANY	SAMPLING/TESTING PERSONNEL

MATERIALS/EQUIPMENT INSPECTION (Materials received and inspected against specifications)			
MATERIAL/EQUIPMENT DESCRIPTION	SPECIFICATION	MATERIAL ACCEPTED?	COMMENT/REASON/ACTION
		YES <input type="checkbox"/> NO <input type="checkbox"/>	
		YES <input type="checkbox"/> NO <input type="checkbox"/>	
		YES <input type="checkbox"/> NO <input type="checkbox"/>	
		YES <input type="checkbox"/> NO <input type="checkbox"/>	
		YES <input type="checkbox"/> NO <input type="checkbox"/>	
		YES <input type="checkbox"/> NO <input type="checkbox"/>	

SUBMITTALS INSPECTION / REVIEW				
SUBMITTAL NO	SUBMITTAL DESCRIPTION	SPEC/PLAN REFERENCE	SUBMITTAL APPROVED?	COMMENT/REASON/ACTION
			YES <input type="checkbox"/> NO <input type="checkbox"/>	
			YES <input type="checkbox"/> NO <input type="checkbox"/>	
			YES <input type="checkbox"/> NO <input type="checkbox"/>	
			YES <input type="checkbox"/> NO <input type="checkbox"/>	

<b>OFF-SITE SURVEILLANCE ACTIVITIES, INCLUDING ACTIONS TAKEN:</b>							
<b>ACCUMULATION/STOCKPILE AREA INSPECTION</b>							
INSPECTION PERFORMED BY:				SIGNATURE OF INSPECTOR:			
ACCUMULATION/ STOCKPILE AREA LOCATION							
NO OF CONTAINERS:		NO OF TANKS:		NO OF ROLL-OFF BOXES:		NO OF DRUMS:	

INSPECTION RESULTS:	
<b>TRANSPORTATION AND DISPOSAL ACTIVITIES/SUMMARY/QUANTITIES:</b>	

<b>GENERAL COMMENTS</b> (rework, directives, etc.):	
---	--

<b>LIST OF ATTACHMENTS</b> (examples, as applicable: preparatory phase checklist, QC meeting minutes, safety meeting minutes, crane inspections, crane operation checklist, COCs, weight tickets, manifests, profiles, rework item list, testing plan and log, etc.):	
---	--

*On behalf of the contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge except as noted in this report.*

PROJECT QC MANAGER'S SIGNATURE	DATE
--------------------------------	------

*On behalf of the contractor, I attest that the work for which payment is requested, including stored material, is in compliance with contract requirements.*

PROJECT QC MANAGER'S SIGNATURE	DATE
--------------------------------	------



# TAB A Testing Plan and Log

CH2M HILL Constructors, Inc.

		CTO No.:		CTO Title:				Location:		
SMALL BUSINESS RAC										
A	B	CTO No.:	D	E	F	G	H	I	J	K
Spec Section and Paragraph	Test Required	Proposed Lab	Sampled By	Tested By	Test Location	Frequency	Date Test Made	Test Results	Date Results Forwarded	Remarks

Rev 0: 26JUN98

Sample ID:  
Sample Loc/Desc:  
Project Name:  
Project No:  
Collection  
Date/Time:  
Collected By:  
Analyses Requested:

Preservatives:

Sample ID:  
Sample Loc/Desc:  
Project Name:  
Project No:  
Collection  
Date/Time:  
Collected By:  
Analyses Requested:

Preservatives:

Sample ID:  
Sample Loc/Desc:  
Project Name:  
Project No:  
Collection  
Date/Time:  
Collected By:  
Analyses Requested:

Preservatives:

Sample ID:  
Sample Loc/Desc:  
Project Name:  
Project No:  
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Date/Time:  
Collected By:  
Analyses Requested:

Preservatives:

Sample ID:  
Sample Loc/Desc:  
Project Name:  
Project No:  
Collection  
Date/Time:  
Collected By:  
Analyses Requested:

Preservatives:

Sample ID:  
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Preservatives:

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Preservatives:

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Sample ID:  
Sample Loc/Desc:  
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Project No:  
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Date/Time:  
Collected By:  
Analyses Requested:

Preservatives:

**CUSTODY SEAL**

Sampler's Signature: \_\_\_\_\_

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

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