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WORK PLAN ADDENDUM 22 FOR HIGH SPEED REFUELERS REMOVAL AND PIPELINE
PIGGING NAS CECIL FIELD FL
11/1/2005
CH2MHILL CONSTRUCTORS INC

**Work Plan Addendum No. 22
High Speed Refuelers Removal and
Pipeline Pigging**

**Former Naval Air Station Cecil Field
Jacksonville, Florida**

Revision 00

**Contract No. N62467-98-D-0995
Contract Task Order 0057**

Submitted to:



**U.S. Naval Facilities
Engineering Command
Southern Division**

Prepared by:



115 Perimeter Center Place, N.E.
Suite 700
Atlanta, GA 30346

November 2005

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Contents

Acronym List	III
1.0 Introduction	1-1
1.1 Site History and Project Objectives	1-2
1.1.1 Site Description.....	1-2
1.1.2 Project Objectives	1-3
2.0 Project Execution Plan	2-1
2.1 Scope of Work	2-1
2.1.1 Mobilization and Setup of Temporary Facilities and Site Controls ...	2-1
2.1.2 N-S and E-W HSRs.....	2-4
2.1.3 Pipeline Pigging.....	2-6
2.1.4 Site Restoration	2-7
2.1.5 Containerization, Characterization, and T&D of Contaminated Materials	2-8
2.1.6 Decontamination and Demobilization	2-8
2.1.7 Construction Completion Report.....	2-8
2.2 Project Schedule	2-8
2.3 Communications Plan.....	2-9
2.4 Traffic Control Plan	2-10
3.0 Sampling and Analysis Plan	3-1
3.1 Data Quality Levels for Measurement Data	3-1
3.2 Sampling Objectives	3-4
3.3 Backfill Certification	3-4
3.4 Soil/Solid Wastes Disposal Characterization.....	3-5
3.5 Liquid Wastes Disposal Characterization	3-5
3.6 Sample Documentation.....	3-6
3.7 Field Quality Control	3-7
3.8 Analytical Methods	3-7
4.0 Waste Management Plan.....	4-1
4.1 Waste Characterization.....	4-1
4.2 Waste Management	4-2
4.2.1 Waste Storage Time Limit	4-2
4.2.2 Labels	4-2
4.2.3 General Waste Management Requirements	4-3
4.3 Shipping Documentation.....	4-5
4.4 Transportation.....	4-6
4.4.1 Transporter Responsibilities	4-7
4.4.2 Disposal	4-7
4.4.3 Transportation and Disposal Log	4-8
5.0 Environmental Protection Plan.....	5-1
5.1 Regulatory Drivers	5-1
5.2 Spill Prevention and Control.....	5-1
5.3 Spill Prevention.....	5-1

5.4	Spill Containment and Control.....	5-1
5.5	Spill Cleanup and Removal.....	5-2
5.6	Erosion Control.....	5-2
6.0	Quality Control Plan.....	6-1
6.1	Project QC Manager	6-1
6.1.1	Testing Requirements	6-1
6.1.2	Identification and Certification of Testing Laboratories.....	6-1
6.1.3	Construction.....	6-1
6.2	Mobilization and Site Preparation.....	6-4
6.2.1	Preparatory Phase	6-4
6.2.2	Initial Phase	6-5
6.2.3	Follow-up Phase	6-5
6.3	HSR/Residual Aviation Fuel Removal and Inspection	6-5
6.3.1	Preparatory Phase	6-5
6.3.2	Initial Phase	6-5
6.3.3	Follow-up Phase	6-6
6.4	Pipeline Pigging and Site Restoration	6-6
6.4.1	Preparatory Phase	6-6
6.4.2	Initial Phase	6-7
6.4.3	Follow-up Phase	6-7
6.5	Field Sampling	6-8
6.5.1	Sample Collection and Testing.....	6-8
6.5.2	Preparatory Phase	6-8
6.5.3	Initial Phase	6-8
6.5.4	Follow-up Phase	6-8
6.6	Waste Management.....	6-8
6.6.1	Preparatory Phase	6-8
6.6.2	Initial Phase	6-9
6.6.3	Follow-up Phase	6-9
6.7	Decontamination and Demobilization	6-9
6.7.1	Preparatory Phase	6-10
6.7.2	Initial Phase	6-10
6.7.3	Follow-up Phase	6-10
6.8	CTO Support Organizations	6-10
	The supporting organizations for this project are yet to be determined.....	6-10
7.0	References.....	7-1

Tables

2-1	Communication Matrix	2-11
2-2	Project Personnel Directory.....	2-12
3-1	Data Quality Objectives.....	3-1
3-2	Sampling and Analytical Summary.....	3-2
6-1	Roles, Responsibilities, and Authorities of Individuals Assigned to a Contract Task Order.....	6-3

Figures

2-1	Staked Silt Fence Detail	2-3
2-2	Barricade Fence Detail	2-4
2-3	Temporary Containment of Excavated Soil Detail	2-5
6-1	Project Organizational Chart	6-2

Appendixes

A	Project Schedule
B	Site Specific Health and Safety Plan
C	Quality Control Attachments
	– Transportation and Disposal Log
	– Submittal Register
	– Testing Plan and Log
	– Summary of Field Tests Log
	– Quality Control Manager Appointing Letter
	– Alternate Quality Control Manager Appointing Letter
	– Contractor Daily Production Report
	– Contractor Daily Quality Control Report
	– Preparatory Phase Report

Acronyms

°C	degrees Celsius
°F	degrees Fahrenheit
AALA	American Association for Laboratory Accreditation
AASHTO	American Association of State Highway and Transportation Officials
AFCEE	Air Force Center for Environmental Excellence
AHA	activity hazard analysis
ASTM	American Society for Testing and Materials
BCT	Base Closure Team
AIHA	American Industrial Hygiene Association
bgs	below ground surface
CH2M HILL	CH2M HILL Constructors, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulation
COC	Chain-of Custody
CS	carbon steel
CTO	Contract Task Order
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FID	flame ionization detection
FL-PRO	Florida Petroleum Residual Organic
HSR	high speed refueler
IRCDQM	Installation Restoration Chemical Data Quality Manual
JEA	Jacksonville Electric Authority
JAA	Jacksonville Aviation Authority

LDR	land disposal restriction
mg/kg	milligrams per kilogram
MS/MSD	matrix spike/ matrix spike duplicate
NAS	Naval Air Station
NAVFAC EFD SOUTH	U.S. Naval Engineering Facilities Command, Engineering Field Division, Southern Division
NELAP	National Laboratory Accreditation Program
NIST	National Institute of Standards and Technology
NTR	Navy's Technical Representative
NVLAP	National Voluntary Laboratory Accreditation Program
OVA	organic vapor analyzer
PAH	polycyclic aromatic hydrocarbon
PCBs	polychlorinated biphenyls
PPE	personal protective equipment
ppm	parts per million
QC	Quality Control
ROICC	Resident Officer in Charge of Construction
SAP	Sampling and Analysis Plan
SS	stainless steel
TAL	target analyte list
TAT	turnaround time
TCL	target compound list
TCLP	toxicity characteristic leaching procedure
TRPH	total recoverable petroleum hydrocarbons
TtNUS	Tetra Tech NUS, Inc.
USACE	U.S. Army Corps of Engineers
VOC	volatile organic compound

1.0 Introduction

CH2M HILL Constructors, Inc. (CH2M HILL) has been contracted by the U.S. Naval Facilities Engineering Command, Engineering Field Division South (NAVFAC EFD SOUTH), to prepare this Work Plan Addendum, under Response Action Contract No. N62467-98-D-0995, Contract Task Order (CTO) No. 0057. The purpose of this Work Plan Addendum is to outline the procedures to be used to complete high speed refueler (HSR) removal and pipeline pigging activities at the former Naval Air Station (NAS) Cecil Field, Jacksonville, Florida.

This project will include the following tasks:

- Mobilization and site preparation
- Identification and avoidance of all aboveground and underground utilities or other manmade structures
- Disconnecting and safely cold-cutting all aboveground piping at the HSRs to drain and remove any residual aviation fuel, as well as to facilitate HSR dismantling by others
- Inspecting underground piping at the HSRs and removing any residual aviation fuel. If pipeline pigging becomes necessary to remove residual aviation fuel from the underground piping, the following tasks will be completed:
 - Excavating the area around the underground piping where the pig launcher will be installed
 - Pigging and rendering fuel lines gas free
 - Mechanically capping the underground piping once made gas free
 - Site restoration
- Containerization, characterization, transportation, and disposal (T&D) of generated or accumulated contaminated materials
- Preparation of a Construction Completion Report

This Work Plan Addendum is organized into seven sections of text and three appendixes.

Section 1.0 Introduction includes the site description and project objectives.

Section 2.0 Project Execution Plan details the required scope of work, the project schedule, the communications plan, and the traffic control plan. The NAS Cecil Field Basewide Work Plan (CH2M HILL, 1998) provides a brief description of the reporting requirements under this Contract.

Section 3.0 Sampling and Analysis Plan (SAP) provides project sample locations, sample collection frequency, and the required laboratory analyses for samples collected during project activities. The NAS Cecil Field Basewide Work Plan and Florida Department of

Environmental Protection (FDEP) Standard Operating Procedures (SOPs) outline the sample collection methodology including sample handling, labeling, and required collection of quality assurance (QA) and quality control (QC) samples.

Section 4.0 Waste Management Plan discusses the characterization, disposal, onsite management, and transportation of wastes encountered or generated during project activities. Waste management forms are provided in Appendix C.

Section 5.0 Environmental Protection Plan contains site-specific environmental provisions and references the NAS Cecil Field Basewide Work Plan, which contains the Environmental Protection Plan for all work completed at former NAS Cecil Field.

Section 6.0 Quality Control Plan includes the testing requirements for work described in this Work Plan Addendum. The site-specific project organization for this CTO is also included in this section. The QC attachments (submittal register, testing plan and log, etc.) are provided in Appendix C. All other QC information is contained in the NAS Cecil Field Basewide Work Plan (CH2M HILL, 1998), including information on the quality administrators, the project organization for the work to be completed at former NAS Cecil Field, and the definable features of work for each project site.

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

The site-specific health and safety plan included in Appendix B addresses the work described in this Work Plan Addendum. Section 5.0 Site Health and Safety Plan of the NAS Cecil Field Basewide Work Plan (CH2M HILL, 1998) addresses project-specific health and safety issues for the remedial activities to be completed at former NAS Cecil Field.

1.1 Site History and Project Objectives

1.1.1 Site Description

The underground JP-5 pipeline runs parallel and along the eastern side of the former "A" Avenue (now Aviation Avenue). The main pipeline was installed during the 1950s and was used to convey fuel from the North Tank Fuel Farm to the South Tank Fuel Farm, the Jet Engine Test Cell, and Day Tanks 1 and 2 at NAS Cecil Field. Additional pipelines were later installed to transport fuel from the Day Tanks to the HSRs (Aircraft Fueling Stations) located on both the east/west (E-W) and north/south (N-S) runways. Various sections of the pipeline were removed during the North Tank Fuel Farm, Day Tank 1, and Day Tank 2 removals leaving gaps in the pipeline system. The remainder of the pipeline, including the N-S and E-W HSRs, has been left in place.

A previous scope of work associated with pigging the NAS Cecil Field JP-5 pipeline was completed by CH2M HILL under CTO No. 0021 and is documented in the Construction Completion Report for JP-5 Pipeline Pigging (CH2M HILL, 2004).

The N-S and E-W HSRs consist of multiple aircraft refueling sites directly adjacent to the runways at the former Main Base of NAS Cecil Field. Piping and equipment associated with the hot fueling of Navy jets on the runway ramps is located at the site. The majority of the piping is located underground and has been pigged approximately 2 years ago. Recently,

the Jacksonville Airport Authority (JAA) hired a contractor to remove all the aboveground piping associated with the HSRs. While dismantling the aboveground piping, residual aviation fuel was found. It should be noted that not all the aboveground piping at the HSRs was previously pigged, but a vacuum truck was used to empty the pipelines of aviation fuel without disconnecting any piping as most of the aboveground piping is welded together.

1.1.2 Project Objectives

The project objective is to remove all residual aviation fuel from the aboveground and underground piping at the N-S and E-W HSRs to ensure that no aviation fuel is encountered during future construction activities at the site.

2.0 Project Execution Plan

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

2.1 Scope of Work

The major activities associated with the scope of work at the HSRs are as follows:

- Mobilization and site preparation
- Disconnecting and cold-cutting all aboveground piping at the N-S and E-W HSRs to drain and remove residual aviation fuel
- Inspecting underground piping at the N-S and E-W HSRs and removing any residual aviation fuel
- Pipeline pigging, as necessary to remove residual aviation fuel from the underground piping. The following tasks will be completed as necessary:
 - Excavating the area around the underground piping where the pig launcher will be installed
 - Pigging and gas freeing the fuel lines
 - Mechanically capping the underground piping once made gas free
 - Site restoration
- Containerization, characterization, and T&D of generated or accumulated contaminated materials
- Decontamination and demobilization
- Preparation of a Construction Completion Report

2.1.1 Mobilization and Setup of Temporary Facilities and Site Controls

This task will consist of the mobilization of personnel and equipment to the work area. Project management and scheduling activities, including contractor coordination, will be conducted from the CH2M HILL office located at the former NAS Cecil Field.

Prior to the commencement of any intrusive work at the site, CH2M HILL will coordinate with Sunshine State One Call of Florida and JAA to complete a site utility survey, acquire utility layout plans of the area, and complete the excavation permit. Utilities in the work areas will be marked with paint and stakes, as appropriate. All marked utility lines in construction areas will be uncovered with hand tools. In addition, the progress of subsurface work will be continuously monitored for evidence of obstructions.

Any damage to underground utilities or subsurface structures will be immediately reported to JAA and the Resident Officer in Charge of Construction (ROICC), and subsequently repaired by CH2M HILL using methods approved by JAA and the ROICC.

Erosion control measures will be implemented if soil is stockpiled or an excavation remains open overnight. Plastic sheeting, silt fencing, and hay bales will be available onsite should weather conditions warrant covering and berming stockpiled material to control runoff or dust emissions. Figure 2-1 provides a detail of the staked silt fencing that will be installed around the perimeter of any open excavation and drainage feature. Figure 2-2 shows a detail of the temporary barricade fencing to be placed around any excavations that remain open overnight. Figure 2-3 presents a detail of the temporary containment of excavated soil in the event soil is staged at the site overnight. This temporary containment will consist of straw bales around the perimeter of the staging area and a polyethylene liner and cover.

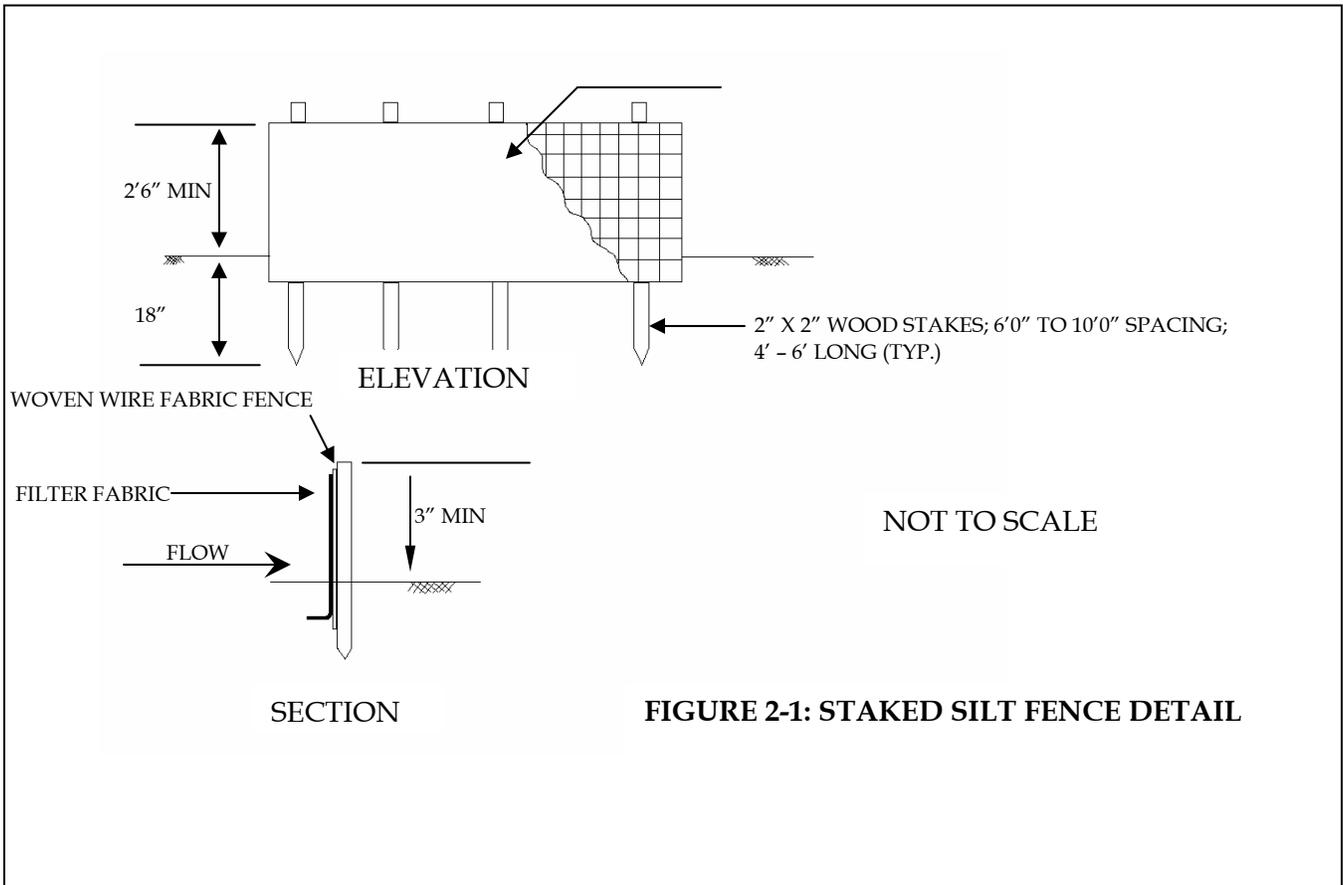
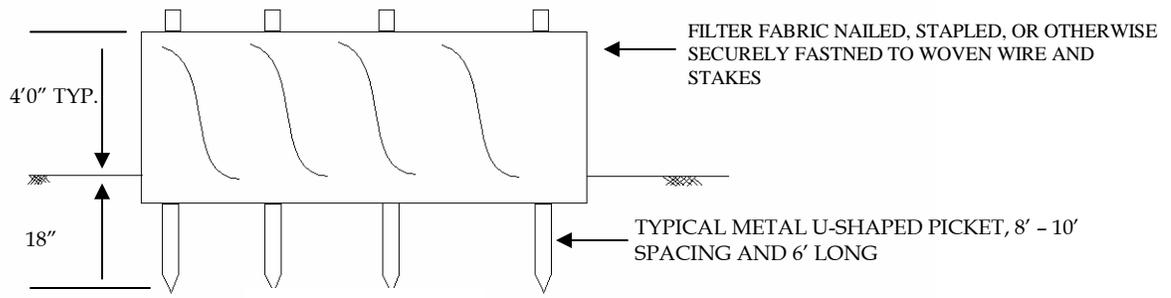
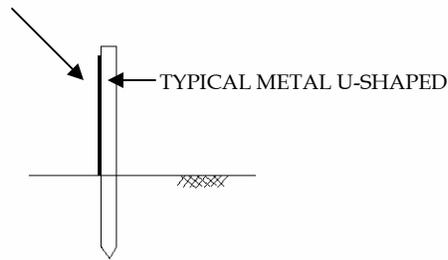


FIGURE 2-1: STAKED SILT FENCE DETAIL



ELEVATION

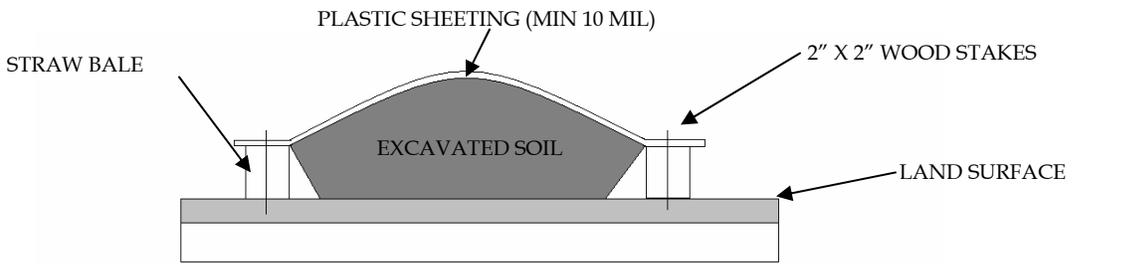
BARRICADE



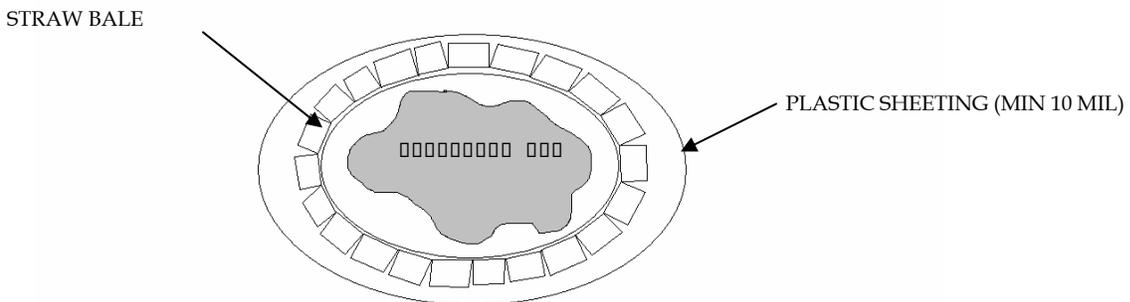
NOT TO SCALE

SECTION

FIGURE 2-2: BARRICADE FENCE DETAIL



SECTION



PLAN

FIGURE 2-3: TEMPORARY CONTAINMENT OF EXCAVATED SOIL DETAIL

2.1.2 N-S and E-W HSRs

The project objective is to ensure that all piping associated with the N-S and E-W HSRs does not contain any residual aviation fuel. All work will be accomplished in a safe manor, with no fires or explosions associated with pipe inspection, cleaning, and cutting activities.

Aboveground piping will be cut manually via a cold method, using a 4-wheel pipe cutter, into manageable sections. The aboveground and underground piping is not required to be decontaminated, but will be drained of all residual aviation fuel. All cut and un-cut aboveground piping will be left onsite for final dismantling and disposition by others. If possible, any residual aviation fuel in underground piping will be recovered by vacuum truck or pump. Pigging of underground piping to remove residual aviation fuel will only occur if necessary. Pigging of the underground piping is discussed in Section 2.1.3.

CH2M HILL will use spill containment materials (such as visqueen, sorbent booms, etc.) and containers (55-gallon drums) to recover, contain, and store residual fuel. Recovered residual fuel will be sampled in accordance with Section 3.0 Sampling and Analysis Plan, and managed, transported, and disposed in accordance with Section 4.0 Waste Management Plan of this Work Plan Addendum.

Work will begin at the N-S HSRs from north to south, followed by the E-W HSRs from east to west. Specific tasks and procedures are outlined below by area. Note that the measurements are only as accurate as a rolling wheel tape measure would allow and the field identified locations for cutting pipes are an estimate and may be revised in the field to accomplish the project objective.

N-S HSRs

- Open and inspect the 4-inch and 6-inch blind flanged stub ends at the ground (fiberglass pipe), at the northernmost re-fueling station; inspect and remove fuel. The distance of underground piping to the next set of above ground piping is estimated at 194 feet.
- Open and inspect the 4-inch and 6-inch piping flanges to remove fuel (fiberglass pipe).
 - Cut piping to remove pipes.
 - Cut 6-inch stainless steel (SS) pipe, 9 cuts for 68 feet.
 - Cut 4-inch carbon steel (CS) pipe, 20 cuts for 186 feet.
- Open and inspect 14-inch CS elbow blind flanged to confirm empty, remove fuel if necessary.
 - Cut 8-inch CS pipe, 8 cuts for 85 feet.
 - Cut 4-inch CS pipe, 1 cut for 5 feet (note: pipe in ground).
- Cut 8-inch SS pipe, 11 cuts for 139 feet.
- Inspect south side of N-S pad, 4- and 8-inch pipe transfers into the ground; disconnect flanges and inspect inside piping for fuel, remove fuel if necessary.
 - Cut 6-inch SS pipe, 8 cuts 93 feet.

- Open and inspect 4- and 8-inch pipe ends blind flanged in the middle of the fueling ramp (fiberglass piping), inspect inside of piping for fuel, remove fuel if necessary, distance of pipe underground estimated at 137 feet.
- Open and inspect second set of 4- and 8-inch blind flanged stubs in ground, distance to second set of stubs is estimated at 59 feet of underground piping, inspect inside of piping for fuel, remove fuel if necessary.
- Inspect second equipment pad, northeast corner, next set of 4- and 8-inch piping connections (flanges) to above ground piping; disconnect flanges and inspect inside of pipes for fuel, remove fuel if necessary, distance underground to flanges is estimated at 137 feet.
 - Cut 8-inch SS pipe, 4 cuts for 50 feet.
 - Cut 4-inch CS pipe, 11 cuts for 97 feet.
- Inspect 14-inch blind flanged elbow; disconnect blind flange and inspect inside piping for fuel, remove fuel if necessary.
 - Cut 8-inch CS pipe, 7 cuts for 83 feet.
 - Cut 4-inch stub blind flange, open inspect for fuel, remove fuel if necessary.
- Inspect standing 4-inch CS piping with blind flanges, cut open pipe and inspect for fuel, remove fuel if necessary, 2 cuts for 12 feet of pipe.
 - Cut 4-inch CS pipe across area, 9 cuts for 117 feet of pipe.
 - Cut 6-inch SS pipe across area, 14 cuts for 164 feet of pipe.

E-W HSRs

- Open and inspect the 4- and 6-inch blind flange stubs in ground at refueling station; disconnect blind flange and inspect for fuel, remove fuel if necessary.
 - Check vane meter for fuel, remove side cover.
 - Inspect 3-inch Viking pump, remove pump head cover and inspect for fuel.
- Inspect middle of refueling ramp, 4- and 6-inch blind flanges; disconnect blind flanges and inspect for fuel, remove if necessary, estimate 60 feet of underground piping
 - Check vane meter for fuel, remove side cover.
- Open and inspect 4-inch CS pipe on equipment pad; disconnect pipe flanges at the ground and inspect for fuel, remove if necessary, estimated 108 feet of underground piping to fueling station.
 - Cut 4-inch CS pipe, 21 cuts for 220 feet of piping.
- Inspect 4-inch stub in ground to day tank; disconnect blind flange and inspect for fuel, remove if necessary.
- Inspect 14-inch blind flange elbow to day tank; remove blind flange and inspect for fuel and remove fuel if necessary.
- Inspect and cut 8-inch CS pipe to equipment pad, 6 cuts for 85 feet (pipe has 14- to 8-inch reducer).

- Inspect and cut 8-inch SS piping to the 8-inch stub for the ramp refueling station, 10 cuts for 96 feet of piping.
- Inspect and cut 8-inch SS piping from equipment pad to the west corner for underground transfer, 3 cuts for 8-inch pipe and 2 cuts for 6-inch pipe, for an estimate of 29 feet.
- Inspect and cut 6-inch SS pipe to refueling station ramp, 5 cuts for 51 feet of pipe
 - Vane meter check for fuel, remove side cover.
- Inspect 4- and 6-inch flanges in transfer pipe in ground disconnect flanges, remove pipe and inspect for fuel, remove fuel if necessary (southwest corner).
- Inspect 4- and 6-inch stubs in ground in the middle of the fueling ramp, with blind flanges, remove blind flanges and inspect for fuel, remove fuel if necessary, distance to middle of ramp with underground piping, estimated at 101 feet.
 - Check vane meter for fuel, remove side cover.
- Inspect 4- and 6-inch stubs aboveground by Florida Army Reserve National Guard and USCG fence (near fire hydrant), disconnect blind flanges and inspect for fuel, remove fuel if necessary, 1 cut, 4-inch CS line and 1 cut, 6-inch CS line for stub ends to remove aboveground piping, distance of underground piping estimated at 142 feet.

2.1.3 Pipeline Pigging

If possible, any residual aviation fuel in underground piping will be recovered by vacuum truck or pump. Pigging of underground piping to remove residual aviation fuel will only occur if necessary. **The procedures outlined below will be used if pigging is necessary.**

2.1.3.1 Excavation to Accommodate Pipeline Pigging

Soil excavated to accommodate pipeline pigging is considered to be uncontaminated. Soil will be excavated using a backhoe excavator or mini-excavator. Special care will be taken to ensure the pipe is not damaged during excavation. A spotter will be used at all times to ensure that the excavator bucket does not come in contact with the pipeline. Hand digging around and below the pipeline will be required. A recovery pit will be excavated below the locations of the pipeline that will be used for fuel and pig recovery. The pits will be lined with 10-mil plastic and a metal drip pan will be placed on top of the plastic liner. The hose of the vacuum truck will be connected directly to the line to recover the fuel/water. The drip pan will act as containment when connecting and disconnecting the pig launcher/receiver and recovering the pig. A vacuum truck will be onsite and running at all times when accessing a pipeline to recover any fuel that may leak.

2.1.3.2 Pigging Activities

Following uncovering the ends of each section of pipe to be pigged, the pig launcher will be installed. For each section of pipe, a new foam pig will be marked for identification prior to launching the pig into the pipeline. The pig will be retrieved from the opposite end from where it was launched. To prevent the possibility of spillage, all residual liquid (i.e., fuel, water) will be captured using a vacuum truck and drip pans will be placed beneath each uncovered end of the pipeline. The residual liquids will be sampled in accordance with

Section 3.0 Sampling and Analysis Plan, and managed, transported, and disposed in accordance with Section 4.0 Waste Management Plan of this Work Plan Addendum. Each section of pipeline will be rendered gas free and capped using mechanical joint caps. The pipeline will be made gas free by using nitrogen to push the poly pig through the pipeline. This will clean and remove residual liquids. Nitrogen is being used to obtain a gas free state of the pipeline.

2.1.4 Site Restoration

If restoration of concrete is required, the following specifications will be followed. Replacement of the concrete will include replacing the fill, compacting to a minimum of 95% of maximum dry density as determined in accordance with American Society for Testing and Materials (ASTM) D1557 for any material disturbed at depth greater than six inches and compacted to a minimum of 100 percent of maximum dry density as determined in accordance with AASTM D1557 for the 6-inch lime-rock stabilized sub base. The replacement will require ¾-inch diameter by 24-inch long smooth dowels be installed 12 inches into the existing concrete every 18 inches on center. The dowels will be set with epoxy into the existing concrete and the ends will be lubricated. Two layers of #6 reinforcement bar will formed at 18 inches on center and one layer will be set 3 inches from the bottom and the other layer will be set 4 inches from the top. Concrete will properties will be as follows:

- Max ultimate compressive strength of 5,000 pounds per square inch (psi) at 28 days
- Portland Cement ASTM C150 Type I
- Aggregate: ASTM C53
- Water Potable
- Air Content: 2.5 percent +/- 1 percent
- Slump: Maximum 3 inches

Material will be mixed, transported, placed, consolidated and finished in accordance with the requirements of the current edition of the Federal Aviation Administration Item, P-501, "Portland Cement Concrete Pavement Description." Control, contraction, and/or expansion joints will be installed as applicable and shall also comply with FAA item P-105.

- Epoxy Requirements: use a Sika epoxy – (Sikadur 35 Hi-Mod LV, Sikadur 32 Hi-Mod, Sikadur Injection Gel or Sikadur 31 Hi-Mod Gel
- Joint Sealer Use a Dow Corning 888 Silicon Joint Sealant or equivalent for joint sealent

If additional fill materials are necessary, certified clean fill furnished from an offsite source(s) will be used. Approved-laboratory analytical results from a representative sample of each fill material are required to certify clean fill furnished from an off-site source(s). One sample from each fill source is required and the required analyses are specified in Section 3.0 Sampling and Analysis Plan of this Work Plan Addendum. Fill material must meet FDEP Soil Cleanup Target Levels (SCTLs) for Direct Exposure – Residential or Leachability based on Groundwater Criteria, whichever is lower, as specified in Chapter 62-777 Florida Administrative Code (FAC) to be certified as "clean."

2.1.5 Containerization, Characterization, and T&D of Contaminated Materials

All generated or accumulated contaminated wastes (recovered aviation fuel, decontamination water, etc.) will be containerized in 55-gallon drums or portable tanks, sampled in accordance with Section 3.0 Sampling and Analysis Plan, and managed, transported, and disposed in accordance with Section 4.0 Waste Management Plan of this Work Plan Addendum.

2.1.6 Decontamination and Demobilization

Personnel and equipment will be properly decontaminated to remove all contamination that may be adhering to personnel or equipment as a result of remedial activities. Any water accumulated during the decontamination process will be containerized in 55-gallon drums or portable tanks, sampled in accordance with Section 3.0 Sampling and Analysis Plan, and managed, transported, and disposed in accordance with Section 4.0 Waste Management Plan of this Work Plan Addendum. Decontamination of personnel and equipment will be performed in accordance with the site-specific Health and Safety Plan provided in Appendix B and the applicable provisions of 29 Code of Federal Regulations (CFR) 1910.120.

During demobilization, temporary facilities, utilities, and equipment will be removed from the site. In addition, any debris or solid waste material remaining from construction activities will be removed and properly disposed of offsite in accordance with Section 4.0 Waste Management Plan of this Work Plan Addendum.

2.1.7 Construction Completion Report

A Construction Completion Report will be prepared to document the activities performed to complete the scope of work and will include:

- Introduction
- Summary of action
- Site photographs
- Complete set of all field test and laboratory analytical results, including waste characterization laboratory analytical results
- Documentation of offsite transportation and treatment of materials, including approved waste disposal profiles, copies of the final manifests and weight tickets, and the certificate of destruction/recycle

2.2 Project Schedule

The major project activities and estimated duration for each are outlined below. Field work will begin following Work Plan Addendum approval. A detailed Project Schedule is included in Appendix A of this Work Plan Addendum.

- Pre-construction meeting/Submittal Preparation/Reviews 2 weeks
- Mobilization and site preparation 1 day
- Disconnecting and cold-cutting all aboveground HSR piping 1 week

- Inspecting underground piping at the HSRs and removing any residual aviation fuel 1 week
- Characterization and T&D of generated or accumulated contaminated materials 3 weeks
- Decontamination and demobilization 1 day
- Construction Completion Report submittal 12 weeks

CH2M HILL anticipates the total project duration will be approximately 18 weeks. This proposed schedule may vary depending on the actual conditions encountered in the field and if pipeline pigging activities are necessary.

2.3 Communications Plan

A communication matrix outlining the lines of communications for NAVFAC EFD SOUTH and CH2M HILL is presented in Table 2-1. Table 2-2 provides a project personnel directory.

TABLE 2-1
Communications Matrix

CH2M HILL Position	Navy Direct Report
Ray Tyler, Executive Sponsor	Eva Clement, CO
Scott Smith, Program Manager	Dorothy Okamoto, COTR Richard Stanley, ACO
Michael Halil, CTO Project Manager	Dorothy Okamoto, COTR Richard Stanley, ACO Mark Davidson, RPM Larry Blackburn, NTR/ROICC

CO – Contracting Officer
 ACO – Administrative Contracting Officer
 NTR – Navy Technical Representative
 RPM – Remedial Project Manager
 COTR – Contracting Officer’s Technical Representative

TABLE 2-2
Project Personnel Directory

Contact	Company
Scott Smith, Program Manager Joe Giandonato, Contracts Administration Manager Richard Rathnow, Health and Safety Manager Theresa Rojas, QA/QC Manager	CH2M HILL Constructors, Inc 115 Perimeter Center Place, N.E. Suite 700 Atlanta, GA 30346-1278 770/604-9095
Michael Halil, Project Manager	CH2M HILL Constructors, Inc 6219 Authority Avenue Jacksonville, FL 32221 904/777-4812 x. 233
Eva Clement, CO	NAVFAC EFD SOUTH P.O. Box 190010 North Charleston, SC 29419-9010 843/820-5518
Richard Stanley, ACO	As above 843/820-5939

TABLE 2-2
Project Personnel Directory

	Contact	Company
Dorothy Okamoto, COTR		As above 843/820-5940
Mark Davidson, RPM		As above 843/820-5526
Larry Blackburn, NTR/ROICC		Engineering Field Activity Southeast Environmental Programs Coordinator/Resident Officer in Charge of Construction P. O. Box 139, Building 13 NAS Jacksonville, FL 32212-0139 904/ 542-8745 ext.1116

2.4 Traffic Control Plan

Traffic control will be the responsibility of the CH2M HILL Project Superintendent. CH2M HILL will minimize disturbance to Cecil Commerce Center traffic patterns during project activities. CH2M HILL will consult with onsite JAA personnel to evaluate site access, placement of equipment, and traffic flow to minimize the impact of this work to JAA operations. CH2M HILL will review all regulations and standard operating procedures regarding vehicle movement and control on the airfield. All personnel will obtain *Runway and Ramp* training from JAA. Runway tower communications (radios) and vehicle warning lights will be required for all site activities.

3.0 Sampling and Analysis Plan

This Sampling and Analytical Plan (SAP), describes CH2M HILL’s tasks and responsibilities related to sampling and analysis activities associated with the work effort. CH2M HILL intends this document to be a site-specific guide for use by the field team while performing the project-required sampling and analysis. Any changes to the activities described in this SAP must be documented as an addendum to this SAP and approved by the Project Manager and Project Chemist.

Samples will be collected in accordance with the U.S. Environmental Protection Agency (EPA) Region IV Environmental Investigative Standard Operating Procedures and Quality Assurance Manual (EISOPQAM), November 2001 and FDEP SOPs for Field Activities, DEP-SOP-001/01, February 1, 2004. Where the two documents conflict, the more stringent will apply.

The sampling team will be qualified under the Navy Installation Restoration Chemical Data Quality Manual (IRCDQM), 1999 sampling requirements.

A Navy, U.S. Army Corps of Engineers (USACE)-, or Air Force Center for Environmental Excellence (AFCEE)- and FDEP- approved laboratory will be used for all sample analyses.

3.1 Data Quality Levels for Measurement Data

The data quality levels for each sampling task are listed in Table 3-1. The sampling events, sampling and analytical requirements, and the required level of quality and data packages are listed in Table 3-2. The quantitation, project action, accuracy, precision, and completeness limits by which the data will be evaluated will be provided by the selected laboratory and approved by CH2M HILL’s Project Chemist.

TABLE 3-1
Data Quality Levels

Sampling Activity	Data Quality Objective Category
Clean Fill Certification (offsite laboratory analyses)	Definitive
Liquid Waste Characterization (offsite laboratory analyses)	Definitive
Solid Waste Characterization (offsite laboratory analyses)	Definitive

**TABLE 3-2
Sampling and Analytical Summary**

Sample Task	Sample Point	Matrix	Sampling Frequency	Approx Sample No	Sampling Method	Sampling Equipment	TAT	Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservtn	Containers
Soil/Solids Characterization Sampling													
Soil/Solids Characterization Sampling	Drums	Soil/Solids	As necessary	1	Composite 5 random grabs into 1 sample	SS spoon, SS bowl	7 day	CCI Level B	TCLP Volatiles	1311/8260B	14 day TCLP extr; 14 day analysis	Cool to 4°C	(1) 4 oz amber glass
									TCLP Semi-Volatiles	1311/8270C	14 day TCLP extr; 7 day extr; 40 day analysis		(4) 8 oz amber glass
									TCLP Metals	1311/6010A/7470	6 month TCLP extr; 6 month analysis Hg: 28 day TCLP extr; 28 day analysis		
									TCLP Pesticides	1311/8081A	14 day TCLP extr; 7 day extr; 40 day analysis		
									TCLP Herbicides	1311/8151A	14 day TCLP extr; 7 day extr; 40 day analysis		
									PCBs	8082	14 day extr; 40 day analysis		
									Corrosivity	9045a	ASAP		
Ignitability	1010/1020	ASAP											
Liquid Characterization Sampling													
Liquid Characterization Sampling (to include drummed liquid / plastic and decon water)	Drums	Water	As necessary	1	Grab	Drum thief or dip jar	7 days	CCI Level B	TCL Volatiles	8260B	14 days	HCl pH< 2; Cool to 4°C	(2) 40 ml vial
									TCL Semi-volatiles	8270C	7 days ext; 40 days analysis	Cool to 4°C	(3) 1L amber glass
									TCL Pesticides	8081A	7 days ext; 40 days analysis		
									TCL Herbicides	8151A	7 day extr; 40 day analysis		
									PCBs	8082	7 day extr; 40 day analysis		(1) L amber glass
									TAL Metals	6010B/7470A	180 days; Hg=28 days	HNO3 pH< 2; Cool to 4°C	(1) 500ml HDPE
									Ignitability	1010	ASAP	Cool to 4°C	(1) 250 mL amber glass
Corrosivity	9040B	ASAP	(1) 250 mL amber glass										

Notes:
1. Calendar days

TABLE 3-2
Sampling and Analytical Summary

Sample Task	Sample Point	Matrix	Sampling Frequency	Approx Sample No	Sampling Method	Sampling Equipment	TAT	Data Package Reqmnt	Required Analysis	Analytical Method	Holding Time	Sample Preservtn	Containers
Backfill Characterization Sampling													
Characterization of Backfill Material	Once per Off-Site Source	Soil	As necessary	1	Composite 5 random grabs into 1 sample (Do not composite VOCs)	SS spoon, SS bowl, TerraCore samplers, (3) Prepared 40 ml vials (4 or 8 oz jar for stone)	7 days	CCI Level C	TCL Volatiles	5035/8260B	14 day	Methanol; Sodium Bisulfite; H2O; Cool to 4°C	TerraCore samplers, (3) Prepared 40 ml vials and 4 oz jar for stone
									TCL Semi-Volatiles	8270C	14 day extr; 40 day analysis		
									PAHs (including 1- and 2-Methylnaphthalene)	8270C (low-level)	14 day extr; 40 day analysis		
									TCL Pesticides	8081A	14 day extr; 40 day analysis		
									TCL Herbicides	8151A	14 day extr; 40 day analysis		
									PCBs	8082	14 day extr; 40 day analysis		
									TRPH	FL-PRO	14 day extr; 40 day analysis		
									TAL Metals	6010B/7471	6 month; Hg 28 days		
	pH	9045B	ASAP										
Trip Blank	Water	1 Per cooler containing volatile samples	1	Prepared by Lab	(2) 40 mL vials	7 days	CCI Level C	TCL Volatiles	8260B	14 day	HCl pH< 2; Cool to 4°C	(2) 40 mL vials	

Notes:
1. Calendar days

3.2 Sampling Objectives

The sampling objectives for this project will be as follows:

- Collect samples for all recovered residual liquids (aviation fuel, water)
- Collect samples for characterization of soil/solids (petroleum-contaminated soil), as necessary
- Collect samples for verification of backfill materials, as necessary.
- Collect samples for water used in equipment/personnel decontamination, as necessary.

3.3 Backfill Certification

In order to certify any necessary backfill source materials as uncontaminated or equal to site conditions, one sample for backfill certification will be collected from each site and source used to provide backfill materials. Backfill material must meet FDEP SCTLs for Direct Exposure - Residential or Leachability based on Groundwater Criteria, whichever is lower, as specified in Chapter 62-777 FAC.

The samples will be collected in the following manner and analyzed in accordance with Table 3-2.

Procedure for Collecting Volatile Fractions

1. Using an auger, split spoon, or other device, retrieve a core from the stockpile or borrow source area to be tested.
2. Remove the core from the auger, split spoon, or other device.
3. Using a TerraCore sampler, take an approximate 5-gram sample from the core.
4. Place the 5-gram sample into a pre-preserved VOA vial and seal the cap tightly. Do this for all vials provided by the laboratory (Note: ideally the entire operation; filling the TerraCore sampler, pushing it into the vial, and capping the vial; should not take more than one minute).
5. After filling the required VOA vials, fill a 4-ounce jar completely full with the remaining core sample. This will be used by the laboratory to determine percent moisture.
6. Label the vials.
7. Place in cooler for shipment to the laboratory.

Procedure for Collecting Non-Volatile Samples

1. From five randomly selected sample locations, collect several spoonfuls of the soil into a stainless steel bowl.
2. Homogenize the five grab samples by the quartering techniques using the stainless steel spoon.
3. Fill the appropriate sample jars full with the homogenized sample.

4. Close the jar, label, and package the sample for shipment to the laboratory.

A CH2M HILL Level C data package will be required along with appropriate QC samples for required analyses. All analytical data will be submitted by both hard copy and electronic files.

3.4 Soil/Solid Wastes Disposal Characterization

Solid waste from the site will be in the form of excavated petroleum-contaminated soil. It is estimated one sample will be collected for soil/solids disposal characterization. Additional samples may be necessary pending the types of waste streams generated. The samples will be collected in the following manner and analyzed in accordance with Table 3-2.

Procedure for Collecting Volatile Fractions

1. At the selected sample location, using an auger, split spoon, or other similar device retrieve a core.
2. Fill the appropriate (4 oz jars) sample jars completely full with the sample from the core.
3. Close the jar, label, and package the sample for shipment to the laboratory.

Procedure for Collecting Non-Volatile Samples

1. From five additional randomly selected sample locations, collect several spoonfuls of the soil into a stainless steel bowl.
2. Homogenize the five samples by the quartering techniques using the stainless steel 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.

A CH2M HILL Level B data package will be required along with appropriate QC samples for required analyses. All analytical data will be submitted by both hard copy and electronic files.

3.5 Liquid Wastes Disposal Characterization

Liquid wastes from the site will be in the form of residual aviation fuel, petroleum-contact water, or decontamination water. Liquid wastes will be containerized in 55-gallon drums or portable tanks. It is estimated that one sample per waste stream will be needed to perform liquid waste characterization. Additional samples may be necessary pending the types of waste streams generated. The sample will be collected in the following manner and analyzed in accordance with Table 3-2.

1. Using a bailer or dip jar, collect a water sample from its containment.
2. The sample containers for volatile analyses will be filled first. The 40-ml vials will be filled so that there is no headspace in each vial.
3. The sample containers for the remaining analyses will then be filled.

4. Label and package the samples for shipment to the laboratory.

A CH2M HILL Level B data package will be required along with appropriate QC samples for required analyses. All analytical data will be submitted by both hard copy and electronic files.

3.6 Sample Documentation

Sampling documentation will include the following:

- Numbered Chain-of-Custody (COC) Reports
- Sample Log Book that includes the following information:
 - Name of laboratories and contacts to which the samples were sent, requested TAT, and data results, when possible
 - Termination of a sample point or parameter and reasons
 - Unusual appearance or odor of a sample
 - Measurements, volume of flow, temperature, and weather conditions
 - Additional samples and reasons for obtaining them
 - Levels of protection used (with justification)
 - Meetings and telephone conversations held with the Southern Division, NTR, regulatory agencies, project manager, or supervisor
 - Details concerning any samples split with another party
 - Details of QC samples obtained
 - Sample collection equipment and containers, including their serial or lot numbers
 - Details of QC samples obtained
 - Field analytical equipment, and equipment utilized to make physical measurements shall be identified
 - Calculations, results, and calibration data for field sampling, field analytical, and field physical measurement equipment
 - Property numbers of any sampling equipment used, if available
 - Sampling station identification
 - Date and time of sample collection
 - Description of the sample location
 - Description of the sample
 - Sampler names and company
 - Collection method
 - Diagrams of processes
 - Maps/sketches of sampling locations
 - Weather conditions that may affect the sample (e.g., rain, extreme heat or cold, wind, etc.)
- Sample Labels
- Custody Seals (minimum of two on each shipping container)

3.7 Field Quality Control

Field duplicate samples and equipment blank samples will be collected at a minimum frequency of 10 percent times the total number of samples collected for an analysis and rounded to the nearest whole number. One trip blank sample will be provided at a frequency of one per sample cooler containing volatile samples. Matrix spike/matrix spike duplicates (MS/MSD) will be required at a maximum frequency of one per sample event or a minimum frequency of 1 per 20 samples. Quantity and frequency are detailed in Table 3-2.

3.8 Analytical Methods

Preliminary analytical results will be faxed to Bethany Garvey at the following fax number per the TAT listed in Table 3-2 from day of sample receipt. The final hardcopy data and electronic file will be delivered to Kama White within 14 days of sample receipt.

Bethany Garvey

Laboratory Coordinator
CH2M HILL
115 Perimeter Center Place, Suite 700
Atlanta, GA 30346
770-604-9182 ext 263
EFax: 678-579-8176
Bgarvey@ch2m.com

Kama White

CH2M HILL
115 Perimeter Center Place, Suite 700
Atlanta, GA 30346
(770) 604-9182 ext 564
Efax: (678) 604-9282
Kama.white@ch2m.com

4.0 Waste Management Plan

The Waste Management Plan addresses the management and disposal requirements for wastes generated during project activities. It is anticipated that the following wastes will be generated:

- Recovered aviation fuel
- Petroleum-contact water (mixture of residual aviation fuel and water)
- Decontamination water
- Petroleum-contaminated soil (possibly encountered if excavation is required)
- Debris, including discarded materials generally considered not water-soluble. Debris includes, but is not limited to, materials used in spill prevention and decontamination (e.g., plastic sheeting, sorbent materials, sampling materials, and personal protective clothing).
- Sampling-related waste including, but not limited to decontamination water, sampling equipment, gloves, and protective clothing.
- Clean and uncontaminated construction debris. Debris includes discarded materials generally considered to be not water-soluble. Debris includes, but is not limited to, concrete and asphalt material.

4.1 Waste Characterization

Wastes will be characterized according to the SAP in Section 3.0 of this Work Plan Addendum. Waste characterization information for wastes will be documented on a waste profile form provided by the offsite treatment or disposal facility as part of the waste acceptance process. CH2M HILL will provide analytical data from waste characterization sampling to the designated off-site facilities for review. The profile will be completed by CH2M HILL, and will be submitted to the CH2M HILL Waste Coordinator for approval prior to submission to the Navy for generator signature. Where generator certification and/or signature are required, Navy personnel will provide. The signed profile will then be submitted to the disposal facility for review and approval.

It is assumed that petroleum-contaminated soils that fail the Toxicity Characteristic test for the organic compounds associated with the D018 through D043 waste codes is not hazardous waste because it is a result of petroleum cleanup activities (40 CFR 261.4(b)(10)). However, petroleum contaminated soil that exhibits the Toxicity Characteristic for metals (D004 - D0011) or pesticides (D012 - D017) would be managed as hazardous wastes.

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

- Generator (Navy) information including name, address, contact, and phone number
- Site name including street/ mailing address

- Activity generating waste (HSR removal/ pipeline cleanup)
- Source of contamination (fuel from petroleum pipeline)
- Historical use for area
- Waste composition (solid, liquid, etc.)
- Physical state of waste (solid, liquid, etc.)
- Applicable hazardous waste codes

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

4.2 Waste Management

4.2.1 Waste Storage Time Limit

Hazardous wastes will be removed from the site within 90 days from the date of generation. Additionally, as required under Chapter 62-770 FAC, petroleum-contaminated soil (including excessively contaminated soil) will not be stored on-site for more than 60 days. However, petroleum-contaminated soil (including excessively contaminated soil) may be containerized in watertight drums and stored onsite for 90 days, after which time proper treatment or proper disposal of the contaminated soil will occur. Other wastes will be removed from the site as soon as possible.

4.2.2 Labels

The labeling of waste containers will be 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. In specific, containers, and tanks used to store/accumulate waste (including soil and groundwater) will include one of the following labels:

- “Analysis Pending” or “Waste Material” - 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
 - EPA ID number
 - Waste codes
 - Manifest number (for containers 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 (contaminated soil)

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

It is expected that each type of label will be required for this project.

4.2.3 General Waste Management Requirements

Contaminated soil will be contained in 55-gallon drums, roll-off boxes, in stockpiles or direct loaded onto waiting trucks. Liquid wastes will be contained in drums or tanks for offsite disposal at an approved wastewater treatment facility.

Hazardous wastes will be segregated from non-hazardous wastes. Additionally, incompatible wastes (e.g., flammable and corrosive wastes) will be segregated. Wastes of the same matrix, contamination, and the same source may be aggregated to facilitate storage and disposal.

Wastes will be accumulated in an area identified or approved by the Navy. If an accumulation area is not designated, CH2M HILL will accumulate hazardous wastes in an area that is not accessible to the general public and that can be secured.

Waste accumulation areas will contain appropriate emergency response equipment. The Health and Safety Plan in Appendix B identifies the specific emergency response procedures and equipment. Hazardous waste accumulation areas will include fire extinguishers (in areas where wastes are 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.**

Drums/Small Containers

The following guidelines relate to drums and small containers:

- Drums and small containers of hazardous waste will be transported to the temporary accumulation areas on wood pallets and will be secured together with non-metallic banding.
- Drums will be inspected and inventoried upon arrival onsite for signs of contamination and/or deterioration.
- Adequate aisle space (for example, 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 covered except when removing or adding waste to the drum. Covers will be properly secured at the end of each workday.
- Drums will be disposed of 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.

Tanks

- Tanks will be inspected upon arrival onsite for signs of deterioration and contamination. Any tank arriving onsite with contents will be rejected.
- Tanks will be provided with covers and secondary containment.
- Only non-stationary tanks (such as a cargo tank or other wheeled tank) will be used to accumulate hazardous waste.
- Each tank will be labeled as discussed above.

Roll-off Boxes

- Roll-off boxes shall be inspected upon arrival on-site. Any roll-off container arriving with contents or in poor condition shall be rejected.
- Roll-off boxes for hazardous or “excessively contaminated” soil will be provided with covers and disposable liners. Liners shall be disposed of as contaminated debris along with the soil.
- When not in use, securely fastened covers will be installed on all roll-off boxes.
- Old labels will be removed and a new, appropriate label applies as discussed above.
- Roll-off containers shall be inspected by the transporter after removal of the liner and decontaminated in the event of evidence of liner failure.

Soil Stockpiles

- Stockpiles of contaminated soil will be located near the excavation areas and within an area of existing contamination.
- Stockpiles will be provided with liner, cover, and perimeter berm to prevent release or infiltration of liquids.
 - Minimum 10- and 6-mil polyethylene sheeting will be used for liners and covers, respectively.
 - The perimeter berm will be constructed of clean materials (such as hay bales under the liner) and allow for collection of any free liquids draining from the stockpile.
 - Accumulated free liquids will be pumped-out to a container or tank.
- Covers and perimeter berms will be secured in-place when not in use and at the end of each workday, or as necessary to prevent wind dispersion or run-off from major precipitation events.
- Construction materials for the stockpiles that contact contaminated soil will be disposed of as contaminated debris.
- Accumulation start dates will be recorded on a log or a sign located at the stockpile.

Waste/Debris Stockpiles

Where appropriate, construction debris and waste, or scrap equipment may be accumulated in stockpiles. These stockpiles will be managed in such a manner as to maintain good housekeeping, and to prevent the spread of contamination.

- Contaminated debris stockpiles will be provided with containment as indicated for soil stockpiles. Damaged or leaking equipment shall be placed in containers, and may not be stored in storage piles.
- Uncontaminated or decontaminated debris stockpiles, or intact equipment should be placed on a liner. These piles will be covered as necessary to prevent storm water run-on and run-off.

Inspection of Waste Storage Areas

Waste accumulation areas will be inspected for malfunctions, deterioration, discharges, and leaks that could result in a release. The following inspection schedule will be followed:

- At least weekly inspection of containers, tanks and roll-off containers (for leaks, signs of corrosion, or signs of general deterioration).
- At least weekly inspection of stockpiles (for liner and berm integrity).

Any deficiencies observed or noted during inspection will be rectified immediately. Appropriate measures may include transfer of waste from leaking container to new container, replacement of liner or cover, or repair of containment berm.

If operations will be suspended for more than 7 days, contact the regulatory compliance manager and alternate inspection arrangements will be made. Prior to demobilization, all hazardous wastes will be removed from the site.

Inspections will be recorded in the daily Quality Control Report (QCR) and include any deficiencies and how issue was rectified. Copies of the report will be maintained onsite, and available for review.

4.3 Shipping Documentation

Prior to offsite disposal of any waste, CH2M HILL will provide the Navy with a waste approval package for each waste stream. This package will include a waste profile naming the U.S. Navy as the generator of the waste, analytical summary table(s) applicable to the waste, letter of approval from the proposed waste disposal facility to accept 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 signed profile will then be submitted to the disposal facility for acceptance approval. Once the approval letter is received from the disposal 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 (if available/applicable)

- Facility information including name, address, phone number, EPA ID number
- Site name including street address at a minimum, mailing address if available
- For all Hazardous Materials (including hazardous wastes) as defined at 49 CFR 171.8, the U.S. Department of Transportation (DOT) Proper Shipping Name (e.g., Hazardous Waste Solid, n.o.s., 9, UN 3077, PG III (D008))
- Type and number of container(s)
- Quantity of waste (volumetric estimate)
- CTO or job number
- Profile number
- 24-hour emergency phone number

Additional documentation required for each shipment of waste includes the following:

- Haul (weight) ticket
- LDR Notification/Certification (required for **hazardous wastes**) (This form also requires the generator signature and submission to the disposal facility.)
- Copy of the relevant portion of the DOT Emergency Response Guide (ERG) that applies to the hazardous material/waste being shipped (if possible)

The generator (Navy) and the transporter must sign the manifest (and LDR, if applicable) prior to the load of waste leaving the site. A copy of the manifest will be retained on site and included with the daily QCR. The original signed manifest will be returned to the address of the generator. The facility will provide a copy of this signed manifest to CH2M HILL for the final report. The final report will include copies of the facility signed manifest, haul ticket, LDR (if applicable), and the Certificate of Disposal/Destruction/ Recycle.

If the signed hazardous waste manifest from the designated offsite facility is not received within 35 days, CH2M HILL will contact the transporter or the designated facility to determine the status of the waste. If the signed hazardous waste manifest has not been received within 45 days, CH2M HILL, in coordination with the Navy, will issue an "Exception Report" to the state of Florida, as required under 40 CFR 262.42.

4.4 Transportation

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, and at a minimum, documented on the T&D Log. A contractor licensed for commercial transportation will transport non-hazardous wastes. In the event that wastes are hazardous, the transporter must have a USEPA Identification number, and will comply with transportation requirements outlined in 49 CFR 171-179 (Department of Transportation) and 40 CFR 263.11 and 263.31 (Hazardous Waste Transportation). A copy of the documentation indicating that the selected transporter has the appropriate licenses will be received and approved by CH2M HILL prior to transport of any waste.

4.4.1 Transporter Responsibilities

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. For shipment of bulk solids, disposal quantities will be based on the difference of weight measurements (tare vs. gross) between the full and empty container, dump truck, or tanker truck. For liquids, disposal quantities will be based on gallons. For containerized (drummed) wastes, quantities may be based on gallons for liquids and/or drum weights. Weights and/or volumes will be recorded on the waste manifest. The transporter will provide copies of weight tickets to CH2M HILL.

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

- Minimize impacts to general public traffic.
- Repair road damage caused by construction and/or hauling traffic.
- Clean up waste spilled in transit.
- Line and cover trucks/trailers used for hauling contaminated waste to prevent releases and contamination.
- Decontaminate vehicles prior to re-use, other than hauling contaminated waste.
- Seal trucks transporting liquids.

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

No materials from other projects will be combined with materials from former NAS Cecil Field.

4.4.2 Disposal

Offsite treatment, recycling or disposal facilities will use the waste profile and supporting documentation (e.g., analytical results and flow-rate data) to determine if they will accept a waste. The treatment, recycling or disposal facility will be responsible for providing a copy of the final waste manifest and for a certificate of treatment or disposal for each load of waste received. Wastes are expected to be disposed as follows:

- Hazardous wastes (including environmental media) will be sent to a permitted, RCRA Subtitle C treatment, storage, or disposal (TSD) facility. None of the wastes from this site are expected to be hazardous.
- Non-hazardous wastes will be disposed in a facility permitted to accept the types and quantities of contamination (for example, Subtitle D landfills). Petroleum contaminated soils and other solids, if generated will be sent to a Subtitle D, non-hazardous landfill.
- Petroleum product and petroleum-contaminated liquids will be sent to a qualified recycler.

The waste will generally be placed into drums or portable tanks, transported and disposed of off-site at an appropriate disposal facility based on generator knowledge and analytical results.

Uncontaminated, or decontaminated, construction and demolition debris may be sent to municipal landfills, or landfills designated for construction/demolition debris.

4.4.3 Transportation and Disposal Log

The T&D Log is used to track waste from generation to final disposition. Wastes will be logged into the T&D Log the day waste is generated and placed into containers.

Transportation of wastes will be inventoried the day of transportation from the site using the T&D Log. Final disposal will be documented on the T&D Log using the Certificate of Disposal. The blank T&D Log is attached in Appendix C.

5.0 Environmental Protection Plan

The Environmental Protection Plan of the Basewide Work Plan (CH2M HILL, 1998) addresses 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 soil excavation and pipeline pigging activities at former NAS Cecil Field.

5.1 Regulatory Drivers

Management of pipeline cleanup activities will comply with the provisions of Chapter 62-770 FAC, Petroleum Contamination Site Cleanup Industrial Criteria, as appropriate.

5.2 Spill Prevention and Control

The provisions for spill prevention and control establish minimum site requirements. All spills will be reported to the CH2M HILL site supervisor and/or project manager. Refer to the Health and Safety Plan for emergency response procedures and further reporting requirements.

5.3 Spill Prevention

All fuel, chemical, and waste storage areas will be properly protected from on- and off-site vehicle traffic. All tanks (including fuel storage and waste storage) must be equipped with secondary containment. These tanks must be inspected daily for signs of leaks.

Accumulated water must be inspected for signs of contamination (such as product sheen, discoloration, and odor) before being discarded. Fire protection provisions outlined in the Health and Safety Plan must be adhered to.

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

5.4 Spill Containment and Control

Spill control materials will be maintained in the support zone, at fuel storage and dispensing locations, and at waste storage areas. 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 (PPE) in responding to spills.

5.5 Spill Cleanup and Removal

All spilled material, contaminated sorbent, 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 (see Section 4 Waste Management Plan) and disposed of according to applicable, federal, state, and local requirements.

5.6 Erosion Control

During those excavation activities that have the potential to disturb the land, CH2M HILL will adhere to the following practices:

- The smallest practical area will be disturbed.
- Temporary erosion and sediment controls will be used to prevent sediment from discharging to any ponds or wetland areas. Structural controls may include the use of straw bales, silt fences, earth dikes, drainage swales, sediment traps, and sediment basins.
- Material staging areas will be properly barricaded for containment and to control run-off.

6.0 Quality Control Plan

This site- and task- specific Quality Control Plan supplements the general quality control provisions provided in the Basewide Work Plan. This plan details the quality administrators, the project organization for the work to be completed and the definable features of the pipeline pigging.

The submittal register, included in Appendix B of this Work Plan Addendum, documents submittals in accordance with Appendix B of CH2M HILL's Contract Management Plan (CH2M HILL, July 1998). CH2M HILL, the Navy, or others will approve submittals as identified in the Submittal Register. All approved submittals will be distributed by CH2M HILL to the appropriate Navy personnel (CO, ROICC (in duplicate), etc.), the project site, and to the project file.

The site-specific project organization chart (Figure 6-1) depicts the chain-of-command for this CTO and the individuals responsible for executing the work as indicated. Individual roles and responsibilities of CTO personnel are summarized in Table 6-1 (Work Plan Addendum).

6.1 Project QC Manager

The Project QC Manager will be Greg Ramey. The Project QC Manager and alternate appointing letters are provided in Appendix C.

6.1.1 Testing Requirements

This section describes construction testing and environmental analysis laboratories and their certifications; environmental sampling and analysis, and test control. The Testing Plan and Log is provided in Appendix C.

6.1.2 Identification and Certification of Testing Laboratories

The environmental testing laboratories utilized for this CTO project will function as a subcontractor or a lower tier subcontractor, and have not yet been identified.

6.1.3 Construction

Construction testing for the pipeline pigging under this CTO will be performed using laboratories that are National Institute of Standards and Technology (NIST), National Voluntary Laboratory Accreditation Program (NVLAP), American Association of State Highway and Transportation Officials (AASHTO), or American Association for Laboratory Accreditation (AALA) certified.

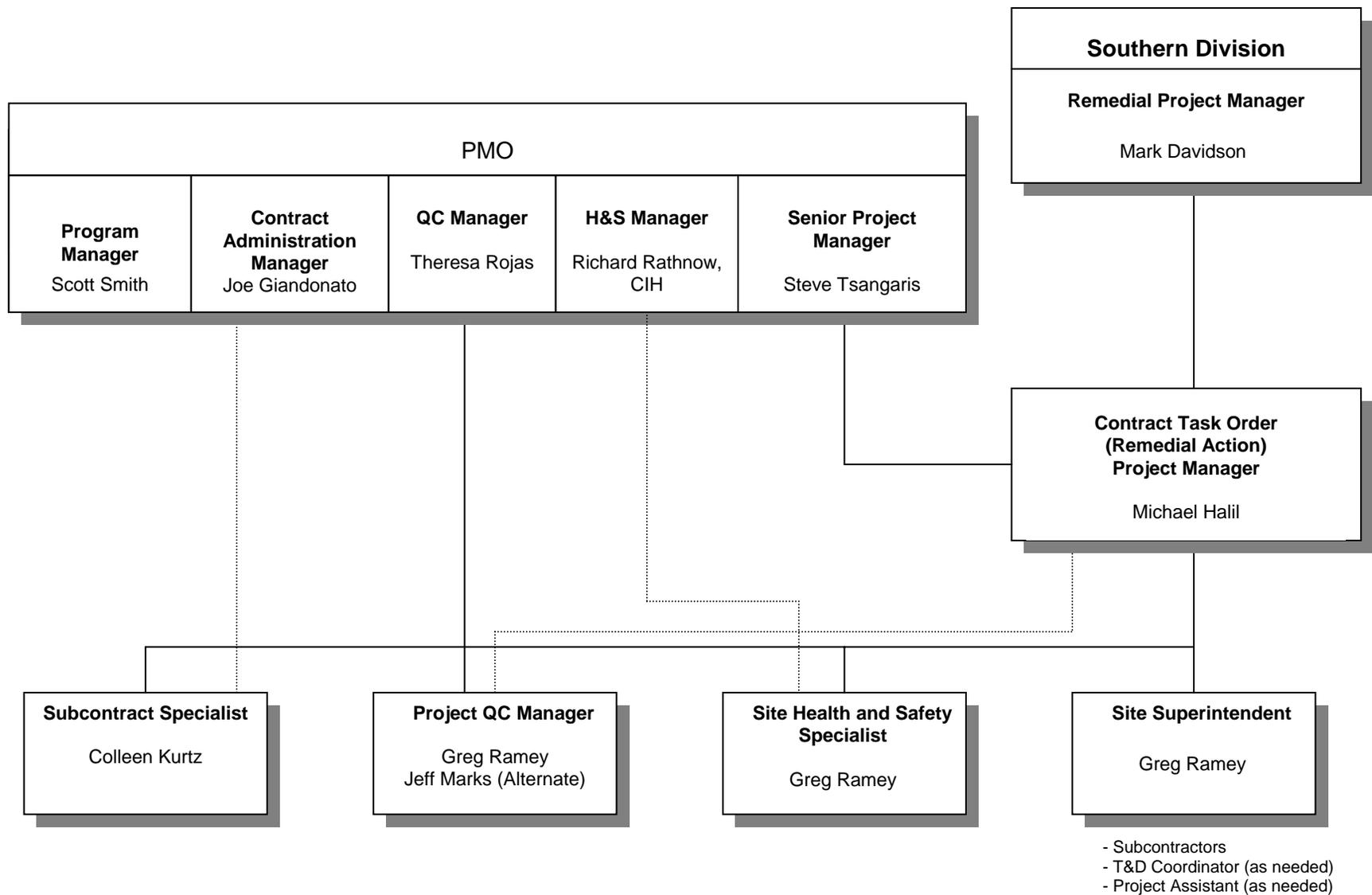


Figure 6-1
Project Organization Chart

TABLE 6-1
Roles, Responsibilities, and Authorities of Individuals Assigned to a Contract Task Order

Role	Responsibility	Authority
Project Manager	<ul style="list-style-type: none"> • Management and Technical Direction of work • Communication with Southern Division RPM and NTR • Overview subcontractor performance • Select CTO staff • Develop CTO Work Plan and supporting plans • Meet CTO Performance Objectives • Prepare status reports 	<ul style="list-style-type: none"> • Approve subcontractor selection • Approve invoices to Southern Division • Approve CTO baseline schedule • Stop work at the site for any reason • Approve payment to vendors and suppliers • Approve payment to subcontractors
Site Superintendent	<ul style="list-style-type: none"> • Responsible for all site activities • Provide direction to subcontractors • Act for Project Manager • Provide daily status reports • Prepare CTO Work Plan • Conduct daily safety meetings • Review subcontractor qualifications • Stop work for unsafe conditions or practices 	<ul style="list-style-type: none"> • Stop work for subcontractors • Approve corrective action for site work-arounds • Approve materials and labor costs for site operations • Resolve subcontractor interface issues • Approve daily and weekly status reports
Resident Engineer	<ul style="list-style-type: none"> • Monitor and oversee subcontractor compliance with scope of work • Review requests for changes in scope of work • Review technical qualifications of subcontractors • Prepare Field Change Requests • Respond to Design Change Notices • Recommend improvements in work techniques or metrics • Recommend work-around to Site Superintendent 	<ul style="list-style-type: none"> • Approve Field Change Requests below ceiling amount • Complete daily compliance report
Field Accountant	<ul style="list-style-type: none"> • Provide project scheduling coordination • Responsible for site cost tracking and reporting • Maintain record of site purchases • Maintain government property records 	<ul style="list-style-type: none"> • Approve payables for disposable items
Transportation and Disposal Coordinator	<ul style="list-style-type: none"> • Develop site specific procedures for transport and disposal practices • Plan and coordinate the transport and disposal of waste • Review subcontractor qualifications • Audit T&D subcontractors compliance with contract requirements 	<ul style="list-style-type: none"> • Approve subcontractors daily report of waste material removed from the site • Approve corrective action plans from T&D subcontractor

TABLE 6-1 (CONTINUED)
Roles, Responsibilities, and Authorities of Individuals Assigned to a Contract Task Order

Role	Responsibility	Authority
Project Assistant	<ul style="list-style-type: none"> Maintain CTO files and correspondence Coordinate CTO schedule and monitor deliverables Maintain change management records Maintain Action Tracking System log 	<ul style="list-style-type: none"> Submit Action Tracking System log Assign correspondence log numbers
Project QC Manager/ QC Inspector(s)	<ul style="list-style-type: none"> Monitor and report on subcontractor quality and quantities Audit subcontractors offsite fabrication Maintain Submittal Register Participate in Continuous Improvement Team Stop work for non-compliant operations Maintain Lessons Learned Log 	<ul style="list-style-type: none"> Stop work for non-compliant operations File daily quantities report File Lessons Learned Log Sheet Approve resumption of work for resolved quality issues
Site Health and Safety Specialist	<ul style="list-style-type: none"> Monitor and report on subcontractor safety and health performance Record and report safety statistics Conduct needed site safety and health orientation Maintain Environmental Log Stop work for unsafe practices or conditions 	<ul style="list-style-type: none"> Stop work for unsafe practices or conditions Approve subcontractor site specific health and safety plan Set weekly safety objectives Approve resumption of work for resolved safety issues
Subcontract Specialist	<ul style="list-style-type: none"> Prepare bid packages Purchase disposable materials Maintain subcontract log 	

The definable features of work will be inspected in accordance with the three phases of control. The three phases include preparatory, initial, and follow-up. An overview of the inspection provisions is outlined in the sections that follow.

6.2 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 necessary, are in place to begin the intrusive work activities. Additionally, equipment and materials will be verified functional and in good working condition prior to starting the project.

6.2.1 Preparatory Phase

The preparatory phase will include a review of the relevant activity hazard analyses (AHAs), the project Work Plan Addendum, communications matrix, project schedule, submittal status, and confirmation of appropriate materials and equipment. Communications with the JAA and the protocols for flight line clearance will be reiterated.

6.2.2 Initial Phase

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

6.2.3 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 Addendum. Deficiencies will be noted and corrected.

6.3 HSR/Residual Aviation Fuel Removal and Inspection

The initial approach to removal fuel from piping and associated equipment involves evacuation by gravity draining, pumps and vacuum extraction. Piping runs will be evaluated to ascertain low points, points of access, and locations for cutting the piping into segments to allow gravity draining.

Materials and equipment will be inspected to ensure appropriate and functional for the fuel removal activities. Sufficient quantities, suitable materials of construction, and ample storage capacities for fuel recovery will be considered throughout the work activity. Pipe cutters will also be evaluated for efficient and safe pipe cutting after each use.

6.3.1 Preparatory Phase

The preparatory phase will include a review of the relevant activity hazard analyses (AHAs), the project Work Plan Addendum, and confirmation of appropriate materials and equipment. The preparatory phase may include a review of the system schematic drawings, the Health and Safety Plan and specifications; review of system lines previously drained, verifying actual piping system against the Work Plan; and confirm appropriate equipment, resources and craftsmen are available to perform the work. Prior to commencing the work, controls such as barricades, road signs, piping support structures and security fencing will be installed as necessary for each pipe section.

6.3.2 Initial Phase

Critical to the success of the recovery of residual fuel is the assessment of each piping section planned for evacuation or each entry point for vacuum or pumping. The team will discuss containment, piping support, means and methods for handling recovered fuel to avoid spills, vapor relief mechanisms (to prevent fuel vapor flash), and capping or resealing access locations. These considerations will be discussed as the work progresses at each access point until completion.

Prior to the start of pipeline work activities, the Project QC Manager will complete the initial inspection of the planned operation. The inspection will evaluate personnel qualifications, equipment conditions, site arrangements and containment for the particular section of pipe, spill response preparations, and checklist procedures. Spill response equipment and resources will be in place prior to starting the draining activity. Deficiencies will be documented and corrected prior to starting the activity. No pipe activity will be started if a deficiency is noted.

6.3.3 Follow-up Phase

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

Task	Procedures/Construction Details
Drain Pipelines	<ul style="list-style-type: none"> • Verification of air monitoring instrument calibration, conduct work area air monitoring • Verify piping identified for draining, estimate quantity of fluid, identify fuel type, segregate • Ensure spill equipment present • Update project drawings with location, status, date, initials of inspector, mark piping to indicate readied for draining, pumping or pigging • Coordinate waste transportation or temporary onsite storage
Waste Management	<ul style="list-style-type: none"> • Verification of designated locations of equipment layout, material and waste staging, and decontamination • Update waste tracking log and label waste containers • Inspect segregated wastes, label containers with content • Inspect waste containers for cleanliness, acceptable materials of construction, adequate storage volume

6.4 Pipeline Pigging and Site Restoration

Should pipeline pigging be deemed necessary, materials, equipment and other resources will be procured to fully complete the fuel recovery objectives. After draining the accessible fuel from the pipelines, the pipelines will be isolated and mechanically pigged to remove the remaining fuel. Spool pieces may be installed as necessary to allow for unobstructed pigging operations. Prior to initiating mechanical pigging, pipe integrity will be checked to prevent leaks and any welds will be inspected and tested. This work will involve installation of pig launching and retrieval stations, collection of the product for disposal, and site preparation activities for the insertion and retrieval stations and proper containment facilities.

Site restoration will include grading the work areas and restoring any demolished or damaged concrete structures. Fill material, if needed, will be placed in approximately even lifts and compacted to meet the specifications provided in Section 2.1.3. Soil density and concrete testing will be performed by a laboratory accredited by the National Institute of Standards and Technology (NIST), National Voluntary Laboratory Accreditation Program (NVLAP), American Association of State Highway and Transportation Officials (AASHTO), or American Association for Laboratory Accreditation (AALA) certified.

6.4.1 Preparatory Phase

The preparatory phase will include a review of the system schematic drawings, Work Plan requirements, Health and Safety Plan and specifications; review of system lines to be mechanically pigged, verifying actual piping system against the Work Plan and confirm appropriate equipment, resources and craftsmen are available to perform the work. Prior to commencing the work, controls such as barricades, road signs and security fencing will be installed as necessary for each pipe section. The installation and containment facilities of the

pig insertion and retrieval stations will be inspected for containment, security and that the proper resources are available for spill prevention and containment.

6.4.2 Initial Phase

Prior to the start of pipeline pigging activities, the Project QC Manager will complete the initial inspection of the planned operation. The inspection will evaluate personnel qualifications, equipment conditions, site arrangements and containment for the particular section of pipe, spill response preparations, and checklist procedures. Spill response equipment and resources will be in place prior to starting the draining activity. Deficiencies will be documented and corrected prior to starting the activity. No pipe activity will be started if a deficiency is noted.

6.4.3 Follow-up Phase

The Project QC Manager will be responsible for daily surveillance of the pipe pigging activities. Daily surveillance will verify that the work is being completed according to the Work Plan, the Health and Safety Plan, and industry standards. The daily activity will be documented in the Daily Contractor Quality Control Report.

Task	Procedures/Construction Details
Pipeline Pigging	<ul style="list-style-type: none"> • Verification of air monitoring instrument calibration, conduct work area air monitoring • Verify piping identified for pigging, estimate quantity of fluid, identify fuel type, collect and segregate • Confirm pipe integrity to prevent leaks and prevent spills • Ensure selected pipe pig is appropriate for line size • Review nitrogen cylinder gas composition certificate of analysis • Ensure spill equipment is present, set up secondary containment • Monitor line pressure and flow indicator during each pig launch, record results of observation • Verify recovery of launched pig, inspect recovered pigs • Update project drawings with location, status, date, initials of inspector, mark piping to indicate evacuated • Coordinate offsite waste transportation or temporary onsite storage • Ensure pipeline gas-free prior to turnover
Site Restoration	<ul style="list-style-type: none"> • Concrete sampling in accordance with ASTM C31 and ASTM C39, evaluating test strength in accordance with ACI 301 and ACI 318 • Verify data obtained in the field and that recording forms are accurate and complete • Select locations for performing in-place soil density tests • Perform Surface preparation • Ensure Topsoil Suitability and Placement • Ensure Material Application (Casting) Rates • Provide Mulching and Fertilizing • Perform Damage (e.g. washout) Repair • Ensure Defective Material Rejection • Ensure unused material is properly stored

Task	Procedures/Construction Details
Waste Management	<ul style="list-style-type: none"> • Verification of designated locations of equipment layout, material and waste staging, and decontamination • Update waste tracking log and label waste containers • Inspect segregated wastes, label containers with content • Inspect waste containers for cleanliness, acceptable materials of construction, adequate storage volume

6.5 Field Sampling

6.5.1 Sample Collection and Testing

Representative samples of borrow soil and solid/liquid waste characterization samples will be collected. Environmental samples will be collected in accordance with USEPA and FDEP SOPs. Other controls will include, but are not limited to, maintaining a chain of custody; proper handling, packing, and shipping; sampling performed by qualified persons; and the use of certified laboratories.

6.5.2 Preparatory Phase

The preparatory phase for sample collection activities includes a review of the relevant AHAs, a review of sampling procedures provided in the SAP, verifying acceptance of the selected laboratory, and confirming that the appropriate equipment and materials are available to perform the sampling activities.

6.5.3 Initial Phase

Backfill certification and waste characterization samples will be collected and subsequently analyzed at an approved laboratory in accordance with requirements outlined in the SAP (Section 3.0). Sample collection activities, including proper chain-of-custody documentation, will follow the protocols outlined in the project-specific SAP. Samples will be collected of fill materials and solid/liquid wastes.

6.5.4 Follow-up Phase

The Project QC Manager will observe sample collection activities and the associated documentation records throughout each sampling event. Analytical reports from the approved laboratory will be reviewed for accuracy and quality. If required, data validation information from the laboratory will be reviewed to resolve discrepancies in the analytical data. CH2M HILL QA personnel will validate laboratory data and field sampling results.

6.6 Waste Management

6.6.1 Preparatory Phase

The preparatory phase for transportation and disposal of waste streams includes a review of the waste management plan included in this Work Plan Addendum; disposal, recycling or

treatment facility qualifications; 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 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.

6.6.2 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 soil transport will be lined prior to loading. Containers used for transporting liquids will be free of liquids or 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 recycling or treatment facility, and volume and/or weight of material. Any discrepancies on waste manifest documents will be corrected.

6.6.3 Follow-up Phase

This phase includes verifying that the designated 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, 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.

6.7 Decontamination and Demobilization

Equipment and personnel will be decontaminated in accordance with the provisions of the site specific Health and Safety Plan. Pre-final inspection of cleanliness will be performed by the Site Superintendent and the 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 Addendum. 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.

6.7.1 Preparatory Phase

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

6.7.2 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 CH2M HILL and the Navy.

6.7.3 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 Addendum. Deficiencies will be noted and corrected.

6.8 CTO Support Organizations

The supporting organizations for this project are yet to be determined.

7.0 References

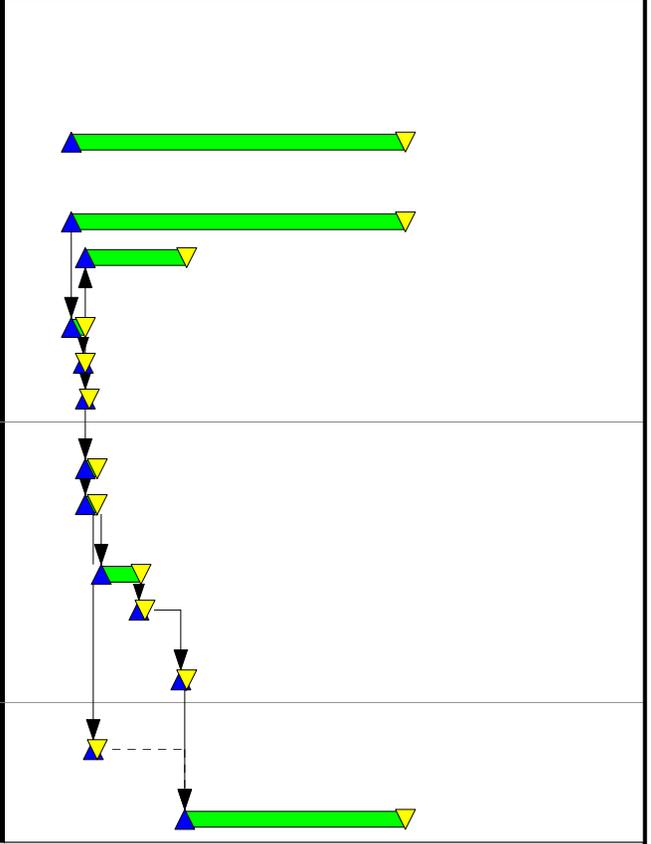
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Tetra Tech NUS, Inc. August 2002. *UST Update August 2002*. Prepared for Naval Air Station Cecil Field, Jacksonville, Florida.

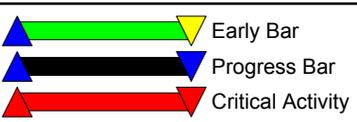
Appendix A

Project Schedule

Activity ID	WBS CHARGE #	% Comp	Activity Description	Orig Dur	Rem Dur	Early Start	Early Finish	2005			2006					
								OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
CTO #0057 - NAS CECIL FIELD																
PHASE 3																
MURPHY HSRs PIPELINE																
Subtotal		0		89	89	23NOV05	31MAR06									
PROJECT MANAGEMENT																
BU97220102	99.22.01.01	0	Offsite Project Management	89	89	23NOV05*	31MAR06									
BU97220101	99.22.01.01	0	Onsite Project Management	27	27	29NOV05	06JAN06									
MOBILIZATION & PREPARATORY WORK																
BU36010394	36.10.05.91	0	Pre-Con Submittals	2	2	23NOV05	28NOV05									
BU99010292	99.22.01.01	0	Pre-Construction Meeting	1	1	28NOV05	28NOV05									
BU36010290	36.10.05.91	0	Subcontractor Mobilization	1	1	29NOV05	29NOV05									
FUEL REMOVAL @ HSRs PIPING																
BU36100590	36.10.05.91	0	Disconnect Aboveground HSR Piping	4	4	29NOV05	02DEC05									
BU36100591	36.10.05.91	0	Inspect Underground Piping & Remove Residual Fuel	4	4	29NOV05	02DEC05									
SAMPLING & ANALYSIS																
BU36020906	36.10.05.91	0	Waste Characterization	11	11	05DEC05	19DEC05									
BU36021491	99.22.01.01	0	Data Evaluation and Management	3	3	19DEC05	21DEC05									
TRANSPORTATION AND DISPOSAL																
BU36190301	36.10.05.91	0	T&D Contaminated Materials	3	3	04JAN06	06JAN06									
DEMOBILIZATION																
BU36210590	36.10.05.91	0	Decon and Demobilization	1	1	02DEC05	02DEC05									
REPORTING																
BU36210605	99.22.01.01	0	Construction Completion Report	61	61	06JAN06	31MAR06									



Start Date 26JAN01
 Finish Date 14JUN06
 Data Date 28OCT05
 Run Date 28NOV05 12:11



NFAC - CO57
 CTO #0057 - NAS CECIL FIELD
 CTO COMPLETION SCHEDULE
 NAVY RAC SOUTHERN DIVISION

Sheet 1 of 1



Appendix B

Site Specific Health and safety Plan

Health and Safety Plan

Work Plan Addendum No. 22 High Speed Refueler Removal and Pipeline Pigging

Former Naval Air Station Cecil Field
Jacksonville, Florida

Contract No. N62467-98-D-0995
Contract Task Order No. 0057

Revision 00

Submitted to:



U.S. Naval Facilities
Engineering Command
Southern Division

Prepared by:



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November 2005

Contents

1.0	Project Information and Description.....	1-1
2.0	Tasks to be Performed Under this Plan	2-1
2.1	Description of Tasks.....	2-1
2.1.1	Hazwoper-Regulated Tasks	2-1
2.1.2	Non-Hazwoper-Regulated Tasks	2-1
2.2	Hazard Analysis	2-2
3.0	Hazard Controls.....	3-1
3.1	Hazards.....	3-1
3.1.1	Working Around Material Handling Equipment	3-1
3.1.2	Excavation Activities	3-2
3.1.3	Operating Heavy Equipment (earthmoving/excavating machinery)	3-2
3.1.4	Exposure to Public Vehicular Traffic.....	3-3
3.1.5	Rigging.....	3-4
3.1.6	Vacuum Truck Operations	3-5
3.1.7	Drum Handling	3-5
3.1.8	Air Compressor Operations	3-5
3.1.9	Lockout/Tagout Activities	3-6
3.1.10	Pipeline Pigging Operations.....	3-6
3.2	General Hazards.....	3-7
3.2.1	General Practices and Housekeeping.....	3-7
3.2.2	Hazard Communication.....	3-7
3.2.3	Shipping and Transportation of Chemical Products	3-8
3.2.4	Lifting.....	3-8
3.2.4	Fire Prevention	3-8
3.2.6	Electrical	3-9
3.2.5	Stairways and Ladders.....	3-10
3.2.6	Heat Stress.....	3-10
3.2.7	Cold Stress.....	3-12
3.2.8	Compressed Gas Cylinders	3-13
3.2.9	Procedures for Locating Buried Utilities	3-13
3.3	Biological Hazards and Controls	3-13
3.3.1	Snakes	3-13
3.3.2	Poison Ivy and Poison Sumac	3-13
3.3.3	Ticks	3-14
3.3.4	Bees and Other Stinging Insects.....	3-14
3.3.5	Bloodborne Pathogens.....	3-14
3.3.6	Mosquito Bites	3-14
3.4	Radiological Hazards and Controls.....	3-15
3.5	Contaminants of Concern.....	Error! Bookmark not defined.
3.6	Potential Routes of Exposure.....	Error! Bookmark not defined.

4.0	Project Organization and Personnel	4-1
4.1	CH2M HILL Employee Medical Surveillance and Training	4-1
4.2	Field Team Chain of Command and Communication Procedures	4-1
	4.2.1 Client: Southern Division, U.S. Navy Facilities Engineering Command (NAVFAC)	4-1
	4.2.2 CH2M HILL	Error! Bookmark not defined.
	4.2.3 CH2M HILL Subcontractors	4-4
5.0	Personal Protective Equipment (PPE)	5-1
6.0	Air Monitoring/Sampling	6-1
6.1	Air Monitoring Specifications	6-1
6.2	Calibration Specifications	6-2
6.3	Air Sampling	6-2
7.0	Decontamination	7-1
7.1	Decontamination Specifications	7-1
7.2	Diagram of Personnel-Decontamination Line	7-1
8.0	Spill-Containment Procedures	8-1
9.0	Site Control Plan	9-1
9.1	Site Control Procedures	9-1
9.2	Hazwoper Compliance Plan	9-1
10.0	Emergency Response Plan	10-1
10.1	Pre-Emergency Planning	10-1
10.2	Emergency Equipment and Supplies	10-2
10.3	Incident Reporting, Investigation and Response	10-2
10.4	Emergency Medical Treatment	10-3
10.5	Evacuation	10-3
10.6	Evacuation Signals	10-4
10.7	Incident Notification and Reporting	10-4
11.0	Behavior Based Loss Prevention System	11-1
11.1	Activity Hazard Analysis	11-1
11.2	Pre-Task Safety Plans	11-2
11.3	Loss Prevention Observations	11-2
11.4	Loss/Near Loss Investigations	11-2
12.0	Approval	12-1
12.1	Original Plan	12-1
12.2	Revisions	12-1

Acronyms

°F	degrees Fahrenheit
ALARA	as low as reasonably achievable
APR	air-purifying respirator
ATL	Atlanta
CH2M HILL	CH2M HILL Constructors, Inc.
CNS	central nervous system
CPR	cardiopulmonary resuscitation
CTO	Contract Task Order
dBA	decibel A-rated
DOT	Department of Transportation
FA	first aid
FID	flame ionization detector
GFCI	ground fault circuit interrupter
HAZCOM	hazard communication
HR	heart rate
HSM	Health and Safety Manager
HSP	Health and Safety Plan
HSR	High Speed Refueler
IDLH	immediately dangerous to life and health
IDW	investigation-derived waste
JAA	Jacksonville Airport Authority
lb	pound
LEL	lower explosive limit
mg/m ³	milligrams per cubic meter
MSDS	Material Safety Data Sheet
mW/cm ²	milliwatt per square centimeter
NAS	Naval Air Station
NDG	nuclear density gauge
NSC	National Safety Council
OSHA	Occupational Safety and Health Administration
PAPR	powered air-purifying respirator
PDF	personal flotation device
PID	photoionization detector
PPE	personal protective equipment
ppm	parts per million
RMSF	Rocky Mountain Spotted Fever
SAR	supplied-air respirator
SCBA	self-contained breathing apparatus
SHSS	Site Health and Safety Specialist
SOP	standard of practice
STEL	short-term exposure limit
SZ	support zone
TBD	to be determined
TMCC	truck-mounted crash cushion
TSDF	treatment, storage, and disposal facility

This Health and Safety Plan (HSP) will be kept on the site during field activities and will be reviewed as necessary. The plan will be amended or revised as project activities or conditions change or when supplemental information becomes available. The plan adopts, by reference, the Standards of Practice (SOPs) in the CH2M HILL *Corporate Health and Safety Program, Program and Training Manual*, as appropriate. In addition, this plan adopts procedures in the project Work Plan. The Site Safety Coordinator (SSC) is to be familiar with these SOPs and the contents of this plan. CH2M HILL Constructors Inc.'s (CH2M HILL's) personnel and subcontractors must sign Attachment 1.

1.0 Project Information and Description

CONTRACT TASK ORDER (CTO) No.: 0057

CLIENT: U.S. Navy Facilities Engineering Command, Southern Division (NAVFAC EFD SOUTH)

PROJECT/SITE NAME: High Speed Refueler Removal and Pipeline Pigging

SITE ADDRESS: Former Naval Air Station Cecil Field, Jacksonville FL

CH2M HILL PROJECT MANAGER: Mike Halil/JAX

CH2M HILL OFFICE: ATL

DATE HEALTH AND SAFETY PLAN PREPARED: November 2005

DATE(S) OF SITE WORK: November 2005 – November 2006

SITE BACKGROUND AND SETTING: The underground JP-5 pipeline runs parallel and along the eastern side of the former "A" Avenue (now Aviation Avenue). The main pipeline was installed during the 1950s and was used to convey fuel from the North Tank Fuel Farm to the South Tank Fuel Farm, the Jet Engine Test Cell, and Day Tanks 1 and 2 at NAS Cecil Field. Additional pipelines were later installed to transport fuel from the Day Tanks to the HSRs (Aircraft Fueling Stations) located on both the east/west (E-W) and north/south (N-S) runways. Various sections of the pipeline were removed during the North Tank Fuel Farm, Day Tank 1, and Day Tank 2 removals, leaving gaps in the pipeline system. The remainder of the pipeline, including the N-S and E-W HSRs, has been left in place.

The N-S and E-W HSRs consist of multiple aircraft refueling sites directly adjacent to the runways at the former Main Base of NAS Cecil Field. Piping and equipment associated with the hot fueling of Navy jets on the runway ramps is located at the site. The majority of the piping is located underground and has been pigged approximately 2 years ago. Recently, the Jacksonville Airport Authority (JAA) hired a contractor to remove all the aboveground piping associated with the HSRs. While dismantling the aboveground piping, residual aviation fuel was found. It should be noted that not all the aboveground piping at the HSRs was previously pigged, but a vacuum truck was used to empty the pipelines of aviation fuel without disconnecting any piping as most of the aboveground piping is welded together.

The project objective is to remove all residual aviation fuel from the aboveground and underground piping at the N-S and E-W HSRs to ensure that no aviation fuel is encountered during future construction activities at the site.

DESCRIPTION OF SPECIFIC TASKS TO BE PERFORMED:

This project will include the following tasks:

- Mobilization and site preparation

- Identification and avoidance of all aboveground and underground utilities or other manmade structures
- Disconnecting and safely cold-cutting all aboveground piping at the HSRs to drain and remove any residual aviation fuel, as well as to facilitate HSR dismantling by others
- Inspecting underground piping at the HSRs and removing any residual aviation fuel. If pipeline pigging becomes necessary to remove residual aviation fuel from the underground piping, the following tasks will be completed:
 - Excavating the area around the underground piping where the pig launcher will be installed
 - Pigging and gas freeing the fuel lines
 - Mechanically capping the underground piping once made gas free
 - Site restoration
- Containerization, characterization, transportation, and disposal (T&D) of generated or accumulated contaminated materials
- Preparation of a Construction Completion Report

2.0 Tasks to be Performed Under this Plan

2.1 Description of Tasks

(Reference Field Project Start-up Form)

Refer to project documents (i.e., Work Plan) for detailed task information. A health and safety risk analysis has been performed for each task and is incorporated in this plan through task-specific hazard controls and requirements for monitoring and protection. An Activity Hazard Analysis is provided in Table 2-1. Tasks other than those listed below require an approved amendment or revision to this plan before tasks begin.

2.1.1 Hazwoper-Regulated Tasks

- Mobilization and site preparation
- Utility locate
- Disconnect/cold cut piping
- Removal residual fuel
- Inspect underground piping
- Excavation
- Pipeline Pigging
- Cap underground piping
- Site restoration
- T&D of contaminated materials

2.1.2 Non-Hazwoper-Regulated Tasks

Under specific circumstances, the training and medical monitoring requirements of federal or state Hazwoper regulations are not applicable. It must be demonstrated that the tasks can be performed without the possibility of exposure in order to use non-Hazwoper-trained personnel. **Prior approval from the Health and Safety Manager (HSM) is required before these tasks are conducted on regulated hazardous waste sites.**

TASKS	CONTROLS
<ul style="list-style-type: none">• General heavy equipment work (excavation, grading, etc.) with clean soils• Construction Completion Report	<ul style="list-style-type: none">• See AHAs• Daily equipment checks• Wear seatbelts

TABLE 2-1

Activity Hazard Analysis

(Refer to Section 3 for hazard controls)

Potential Hazards	Project Activities								
	Mobilization and site preparation	Utility locate	Disconnect/ cold cut piping	Removal residual fuel	Inspect underground piping	Excavation	Pipeline Pigging	Cap underground piping	T&D of contaminated materials
Manual Lifting (HS-29)	X	X	X	X			X	X	X
Fire Prevention (HS-22)	X		X	X			X	X	
Electrical Safety (HS-23)			X						
Lockout /Tagout (HS-33)			X	X			X		
Ladders & Stairs(HS-25)	X								
Compressed Gas Cylinders (HS-63)							X		
Buried Utilities	X	X			X	X		X	
Excavations (HS-32)	X	X				X			
Fall Protection (HS-31)									
Heavy Equipment (HS-27)	X					X		X	X
Confined Space Entry (HS-17)					X				
Concrete & Masonry Work (HS-43)								X	
Cranes and Hoisting (HS-44)									
Demolition (HS-45)								X	
Scaffolding(HS-73)									
Steel erection (HS-62)									
Welding and cutting (HS-22)			X	X					
Aerial Lifts (HS-41)									
Hand & Power Tools (HS-50)	X	X	X	X		X	X	X	
Forklifts (HS-48)									
Drilling (HS_35)									
Noise (HS-39)	X	X	X	X		X	X	X	
Pressurized Lines/Equipment			X	X			X	X	
Pressure Washing/Equip Decon						X			
Vacuum Truck/Pumping Operations			X		X		X		X
Suspended Loads									
Vehicle Traffic		X							X
Haul Truck Operations					X	X			X
Visible Lighting	X	X	X	X		X	X	X	X
Mechanical Guarding Hazards			X				X		X
Asbestos Hazard									
Lead Hazard									
Chemical Hazard-Dermal/Inhalation			X	X	X	X	X	X	X
Dust Hazard (Silica/Metals)	X	X						X	
Fire/Explosion Hazards			X	X	X		X	X	X

3.0 Hazard Controls

This section provides safe work practices and control measures used to reduce or eliminate potential hazards. These practices and controls are to be implemented by the party in control of either the site or the particular hazard. CH2M HILL employees and subcontractors must remain aware of the hazards affecting them regardless of who is responsible for controlling the hazards. CH2M HILL employees and subcontractors who do not understand any of these provisions should contact the SHSS for clarification.

The health and safety hazards posed by field activities have been identified for each project activity and are provided in the Hazard Analysis Table (Table 2.1) in this section. Hazard control measures for project-specific and general H&S hazards are provided in 2.1 and 2.2 of this section.

Activity Hazard Analysis will be prepared before beginning each project activity posing H&S hazards to project personnel using the AHA form provided in the HSP Attachments as a guide. The AHA shall identify the work tasks required to perform each activity, along with potential H&S hazards and recommended control measures for each work task. In addition, a listing of the equipment to be used to perform the activity, inspection requirements and training requirements for the safe operation of the equipment listed must be identified. **AHAs shall be submitted to the Navy Technical Representative (NTR) for review at least 15 days prior to the start of each project activity phase.**

In addition to the controls specified in this section, Project-Activity Self-Assessment Checklists are contained in Attachment 5. These checklists are to be used to assess the adequacy of CH2M HILL and subcontractor site-specific safety requirements. The objective of the self-assessment process is to identify gaps in project safety performance, and prompt for corrective actions in addressing these gaps. Self-assessment checklists should be completed early in the project, when tasks or conditions change, or when otherwise specified by the HSM. The self-assessment checklists, including documented corrective actions, should be made part of the permanent project records.

Project-activity self-assessments checklist shall be completed weekly by the SHSS during the course of the project, completing the applicable checklist depending on the work performed at the time on the project.

3.1 Hazards

3.1.1 Working Around Material Handling Equipment

- Never approach operating equipment 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.

- Because heavy equipment may not be equipped with properly functioning reverse signal alarms, never turn your back on any operating equipment.
- Never climb onto operating equipment or operate contractor/subcontractor equipment.
- Never ride contractor/subcontractor equipment 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 lift; do not ride excavator buckets or crane hooks.
- Always stay alert and maintain a safe distance from operating equipment, especially equipment on cross slopes and unstable terrain.
- No personnel shall be permitted under the load at any time.

3.1.2 Excavation Activities

(Reference CH2M HILL, SOP HS-32, *Excavation and Trenching*)

- CH2M HILL personnel must notify and be granted authorization from the excavation competent person prior to entering any excavation. CH2M HILL personnel must follow all excavation requirements established by the competent person.
- The competent person must inspect the trench and/or excavation everyday and after everyday hazard increasing event. Documentation of this inspection must be maintained onsite at all times.
- Excavations must be protected from cave-ins by adequate protective systems unless the excavation is less than 5 feet in depth and a competent person determines there is no indication of cave-in or the excavation is made entirely in stable rock that is not fractured.
- Prior to excavating at a location, buried utilities in the area must be identified; refer to Section 2.2.8 "Procedures for locating buried utilities".
- 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.
- Refer to CH2M HILL SOP HS-32 "Excavations and Trenching" for more specific details on excavation requirements.

3.1.3 Operating Heavy Equipment (earthmoving/excavating machinery)

(Reference CH2M HILL, SOP HS-27, *Earthmoving Equipment*)

- CH2M HILL authorizes only those employees qualified by training or previous experience to operate material handling equipment.
- 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 shall be corrected before the equipment is placed in service. Documentation of this inspection must be maintained onsite at all times.

- Equipment must be on a stable foundation such as solid ground or cribbing; outriggers are to be fully extended.
- 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 shall be in a neutral position, with the motors stopped and brakes set.
- Equipment which is operating in reverse must have a reverse signal alarm distinguishable from the surrounding noise or a signal person when the operators view is obstructed.
- When equipment is used near energized powerlines, the closest part of the equipment must be at least 10 feet from the powerlines < 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 powerlines must be considered to be an 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; refer to Section 2.2.8 "Procedures for locating buried utilities".
- 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 shall be set whenever equipment is parked; wheels must be chocked when parked on inclines.
- When 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.

3.1.4 Exposure to Public Vehicular Traffic

The following precautions must be taken when working around traffic, and in or near an area where traffic controls have been established by a contractor.

- Exercise caution when exiting traveled way or parking along street – avoid sudden stops, use flashers, etc.
- 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.

- 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, flash flooding, limited sight-distance, hills, curves, guardrails, width of shoulder (i.e., breakdown lane), etc.
- Always remain aware of an escape route -- behind an established barrier, parked vehicle, guardrail, etc.
- 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 traffic, a “buddy system” should be used, where one worker is looking towards traffic.
- When working on highway projects, obtain a copy of the contractor’s traffic control plan.
- Work area should be protected by a physical barrier – such as a K-rail or Jersey barrier.
- Review traffic control devices to ensure that they are adequate to protect your work area. Traffic control devices should: 1) convey a clear meaning, 2) command respect of road users, and 3) give adequate time for proper traffic response. The adequacy of these devices are dependent on limited sight distance, proximity to ramps or intersections, restrictive width, duration of job, and traffic volume, speed, and proximity.
- Either a barrier or shadow vehicle should be positioned a considerable distance ahead of the work area. The vehicle should be equipped with a flashing arrow sign and truck-mounted crash cushion (TMCC). All vehicles within 40 feet of traffic should have an orange flashing hazard light atop the vehicle.
- Except on highways, flaggers should be used when 1) two-way traffic is reduced to using one common lane, 2) driver visibility is impaired or limited, 3) project vehicles enter or exit traffic in an unexpected manner, or 4) the use of a flagger enhances established traffic warning systems.
- Lookouts should be used when physical barriers are not available or practical. The lookout continually watches approaching traffic for signs of erratic driver behavior and warns workers. Vehicles should be parked at least 40 feet away from the work zone and traffic. Minimize the amount of time that you will have your back to oncoming traffic.

3.1.5 Rigging

- Stay as clear as possible of all hoisting operations. Loads shall not be hoisted overhead of personnel.
- Hoists shall not be used to lift or lower personnel.
- Do not exceed hoist load limits.

- Ensure load is level and stable before hoisting
- Inspect all rigging equipment prior to use. Do not use defective rigging for any reason.
- Only use rigging equipment for the purpose it was designed and intended.
- Ground discharging device used to inert or purge tank.
- Use adequate capacity crane to remove UST 10,000 gallon or greater in size.

3.1.6 Vacuum Truck Operations

- Operate vacuum truck in accordance with API Recommended Practice 2219, "Safe Operations of Vacuum Truck".
- Locate vacuum truck upwind of tank with discharge hose downwind of truck and tank
- Keep vacuum truck 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.

3.1.7 Drum Handling

- Minimize transportation of drums
- Individuals manually handling drums shall wear ANSI approved safety toed boots with metatarsal guards.
- Assure that drums are secured to avoid tipping, falling, or spilling of contents.
- Use mechanical means for handling drums, including material handling equipment or a drum dolly
- Transfer the content of drums using a method that minimizes contact with material.
- Spill-containment and PPE procedures must be appropriate for the material to be handled.

3.1.8 Air Compressor Operations

- All hoses, connections, and valves must be rated for the maximum pressure to be used in the system.
- Inspect transfer lines/hoses, valves and all connections for wear, damage and security prior to each day's use and replace when defective/worn.

- Wear hearing protection when working in the immediate vicinity of the air compressor when operating
- 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 to determine whether they are in good operating condition.

3.1.9 Lockout/Tagout Activities

(Reference CH2M HILL, SOP HS-33, *Lockout and Tagout*)

- Only qualified personnel may work on energized equipment that has not been deenergized by lockout/tagout procedures.
- When CH2M HILL controls the work, CH2M HILL must verify that subcontractors affected by the unexpected operation of equipment develop a written lockout/tagout program, provide training on lockout/tagout procedures and coordinate its program with other affected subcontractors. This may include compliance with the owner or facility lockout/tagout program.
- When CH2M HILL personnel are affected by the unexpected operation of equipment they must complete the lockout/tagout training course in the Basic Program. Project training may also be required on site specific lockout procedures.
- Standard lockout/tagout procedures include the following six steps: 1) notify all personnel in the affected area of the lockout/tagout, 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, and 6) verify that isolation and deenergization of the equipment has been accomplished. Once verified that the equipment is at the zero energy state, work may begin.
- 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.
- Refer to CH2M HILL SOP HS-33 "Lockout and Tagout" for more specific details on lockout/tagout requirements.

3.1.10 Pipeline Pigging Operations

- Proper personal protective equipment (PPE) will be worn during pigging activities
- Line breaking procedures will be in place.
- Spill containment facilities will be in place.

- O2/LEL readings will be taken prior to entry.
- Lines will be bled and drained completely, and contents placed in vacuum truck.
- Secondary containment will be in-place if necessary.
- Pipelines will be inerted with nitrogen in accordance with the work plan.
- Compressed gas safety measures will be followed.
- Bond and ground containers will be used for transfer of flammable liquids.
- Non-sparking tools will be used as required.

3.2 General Hazards

3.2.1 General Practices and Housekeeping

(Reference CH2M HILL- SOP HS-20, *General Practices*)

- Site work should be performed during daylight hours whenever possible. Work conducted during hours of darkness requires enough illumination intensity to read a newspaper without difficulty.
- Good housekeeping must be maintained at all times in all project work areas.
- Common paths of travel should be established and kept 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.
- Specific areas should be designated for the proper storage of materials.
- Tools, equipment, materials, and supplies shall be stored in an orderly manner.
- As work progresses, scrap and unessential materials must be neatly stored or removed from the work area.
- Containers should be provided for collecting trash and other debris and shall be removed at regular intervals.
- All spills shall be quickly cleaned up. Oil and grease shall be cleaned from walking and working surfaces.

3.2.2 Hazard Communication

(Reference CH2M HILL-SOP HS-05, *Hazard Communication*)

The SHSS is to perform the following:

- Complete an inventory of chemicals brought on site by CH2M HILL using Attachment 2.
- Confirm that an inventory of chemicals brought on site by CH2M HILL subcontractors is available.

- Request or confirm locations of Material Safety Data Sheets (MSDSs) from the client, contractors, and subcontractors for chemicals to which CH2M HILL employees potentially are exposed.
- Before or as the chemicals arrive on site, obtain an MSDS for each hazardous chemical.
- Label chemical containers with the identity of the chemical and with hazard warnings, and store properly.
- Give employees required chemical-specific HAZCOM training using Attachment 3.
- Store all materials properly, giving consideration to compatibility, quantity limits, secondary containment, fire prevention, and environmental conditions.

3.2.3 Shipping and Transportation of Chemical Products

(Reference CH2M HILL's *Procedures for Shipping and Transporting Dangerous Goods*)

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 CH2M HILL 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 HSM or the Equipment Coordinator for additional information.

3.2.4 Lifting

(Reference CH2M HILL-SOP HS-29, *Lifting*)

Proper lifting techniques must be used when lifting any object:

- Plan storage and staging to minimize lifting or carrying distances.
- Split heavy loads into smaller loads.
- Use mechanical lifting aids whenever possible.
- Have someone assist with the lift -- especially for heavy or awkward loads.
- Make sure the path of travel is clear prior to the lift.

3.2.4 Fire Prevention

(Reference CH2M HILL- SOP HS-22, *Fire Prevention*)

- Fire extinguishers shall 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, and
 - undergo a maintenance check each year.
- The area in front of extinguishers must be kept clear.
- Post "Exit" signs over exiting doors, and post "Fire Extinguisher" signs over extinguisher locations.
- 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, covered container until removed from the site.
- Flammable/combustible liquids must be kept in approved containers, and must be stored in an approved storage cabinet.

3.2.6 Electrical

(Reference CH2M HILL-SOP HS-23, *Electrical*)

- Only qualified personnel are permitted to work on unprotected energized electrical systems.
- Only authorized personnel are permitted to enter high-voltage areas.
- Do not tamper with electrical wiring and equipment unless qualified to do so. All electrical wiring and equipment must be considered energized until lockout/tagout procedures are implemented.
- Inspect electrical equipment, power tools, and extension cords for damage prior to use. Do not use defective electrical equipment, remove from service.
- All temporary wiring, including extension cords and electrical power tools, must have ground fault circuit interrupters (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 UL approved.
- Operate and maintain electric power tools and equipment according to manufacturers' instructions.
- Maintain safe clearance distances between overhead power lines and any electrical conducting material unless the power lines have been de-energized and grounded, or where insulating barriers have been installed to prevent physical contact. Maintain at least 10 feet from overhead power lines for voltages of 50 kV or less, and 10 feet plus ½ inch for every 1 kV over 50 kV.
- Temporary lights shall not be suspended by their electric cord unless designed for suspension. Lights shall be protected from accidental contact or breakage.
- Protect all electrical equipment, tools, switches, and outlets from environmental elements.

3.2.5 Stairways and Ladders

(Reference CH2M HILL-SOP HS-25, *Stairways and Ladders*)

- 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.
- Personnel must not use pan and skeleton metal stairs until permanent or temporary treads and landings are provided the full width and depth of each step and landing.
- Ladders must be inspected by a competent person 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 shall not be loaded beyond their rated capacity.
- Only one person at a time shall climb on or work from an individual ladder.
- User must face the ladder when climbing; keep belt buckle between side rails
- Ladders shall 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
- Fixed ladders \geq 24 feet in height must be provided with fall protection devices.
- Fall protection should be considered when working from extension, straight, or fixed ladders greater than 6 feet from lower levels and both hands are needed to perform the work, or when reaching or working outside of the plane of ladder side rails.

3.2.6 Heat Stress

(Reference CH2M HILL- SOP HS-09, *Heat and Cold Stress*)

- Drink 16 ounces of water before beginning work. Disposable cups and water maintained at 50°F to 60°F should 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.
- Avoid direct sun whenever possible, 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 SHSS to avoid progression of heat-related illness.

Symptoms and Treatment of Heat Stress					
	Heat Syncope	Heat Rash	Heat Cramps	Heat Exhaustion	Heat Stroke
Signs and Symptoms	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.
Treatment	Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.	Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.	Remove to cooler area. Rest lying down. Increase fluid intake.	Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.	Cool rapidly by soaking in cool—but not cold—water. Call ambulance, and get medical attention immediately!

Monitoring Heat Stress

These procedures should be considered when the ambient air temperature exceeds 70°F, the relative humidity is high (>50 percent), or when workers exhibit symptoms of heat stress.

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.

3.2.7 Cold Stress

(Reference CH2M HILL- SOP HS-09, *Heat and 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 SHSS 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.

3.2.8 Compressed Gas Cylinders

- Valve caps must be in place when cylinders are transported, moved, or stored.
- Cylinder valves must be closed when cylinders are not being used and when cylinders are being moved.
- Cylinders must 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.

3.2.9 Procedures for Locating Buried Utilities

- Where available, obtain utility diagrams for the facility.
- Review locations of sanitary and storm sewers, electrical conduits, water supply lines, natural gas lines, and fuel tanks and lines.
- Review proposed locations of intrusive work with facility personnel knowledgeable of locations of utilities. Check locations against information from utility mark-out service.
- Where necessary (e.g., uncertainty about utility locations), excavation or drilling of the upper depth interval should be performed manually
- Monitor for signs of utilities during advancement of intrusive work (e.g., sudden change in advancement of auger or split spoon).
- When the client or other onsite party is responsible for determining the presence and locations of buried utilities, the SHSS should confirm that arrangement.

3.3 Biological Hazards and Controls

3.3.1 Snakes

Snakes typically are found in underbrush and tall grassy areas. If you encounter a snake, stay calm and look around; there may be other snakes. Turn around and walk away on the same path you used to approach the area. If a person is bitten by a snake, wash and immobilize the injured area, keeping it lower than the heart if possible. Seek medical attention immediately. **DO NOT** apply ice, cut the wound, or apply a tourniquet. Try to identify the type of snake: note color, size, patterns, and markings.

3.3.2 Poison Ivy and Poison Sumac

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. Become familiar with the identity of these plants. 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.

3.3.3 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 boots; spray **only outside** of clothing with permethrin or permanone and spray skin with only DEET; and check yourself frequently for ticks.

If bitten by a tick, grasp it at the point of attachment and carefully remove it. After removing the tick, wash your hands and disinfect and press the bite areas. Save the removed tick. Report the bite to human resources. Look for symptoms of Lyme disease or Rocky Mountain spotted fever (RMSF). Lyme: a rash might appear that looks like a bullseye with a small welt in the center. RMSF: a rash of red spots under the skin 3 to 10 days after the tick bite. In both cases, chills, fever, headache, fatigue, stiff neck, and bone pain may develop. If symptoms appear, seek medical attention.

3.3.4 Bees and Other Stinging Insects

Bee and other stinging insects may be encountered almost anywhere and may present a serious hazard, particularly to people who are allergic. Watch for and avoid nests. Keep exposed skin to a minimum. Carry a kit if you have had allergic reactions in the past, and inform the SHSS and/or buddy. If a stinger is present, remove it carefully with tweezers. Wash and disinfect the wound, cover it, and apply ice. Watch for allergic reaction; seek medical attention if a reaction develops.

3.3.5 Bloodborne Pathogens

(Reference CH2M HILL- SOP HS-36, *Bloodborne Pathogens*)

Exposure to bloodborne pathogens may occur when rendering first aid or CPR, or when coming into contact with landfill waste or waste streams containing potentially infectious material. Exposure controls and personal protective equipment (PPE) are required as specified in CH2M HILL SOP HS-36, *Bloodborne Pathogens*. Hepatitis B vaccination must be offered before the person participates in a task where exposure is a possibility.

3.3.6 Mosquito Bites

Due to the recent detection of the West Nile Virus in the Southeastern United States it is recommended that **preventative 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 permethrin or DEET since mosquitoes may bite through thin clothing.
- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 35% DEET (N,N-diethyl-meta-toluamide). 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.

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 3-15 days.

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

3.4 Radiological Hazards and Controls

Refer to CH2M HILL's *Corporate Health and Safety Program, Program and Training Manual, and Corporate Health and Safety Program, Radiation Protection Program Manual*, for standards of practice in contaminated areas.

3.5 Contaminants of Concern

Contaminants of concern are listed in Table 3-1.

TABLE 3-1
Contaminants of Concern
(Refer to Project Files for more detailed contaminant information)

Contaminant	Location and Maximum ^a Concentration (ppm)	Exposure Limit ^b	IDLH ^c	Symptoms and Effects of Exposure	PIP ^d (eV)
JP- 5 Fuel (as Kerosene)	GW: SB: SS:	100 mg/m3	N.D.	Skin irritation; respiratory irritation to the nose, throat, lungs, and respiratory tract. Chemical pneumonia, lung damage, respiratory failure; gastrointestinal disturbances, irritation, nausea, vomiting and diarrhea, and central nervous system effects of headaches, dizziness, loss of balance/coordination	--

TABLE 3-1
 Contaminants of Concern
 (Refer to Project Files for more detailed contaminant information)

Contaminant	Location and Maximum ^a Concentration (ppm)	Exposure Limit ^b	IDLH ^c	Symptoms and Effects of Exposure	PIP ^d (eV)
Footnotes: ^a Specify sample-designation and media: SB (Soil Boring), A (Air), D (Drums), GW (Groundwater), L (Lagoon), TK (Tank), S (Surface Soil), SL (Sludge), SW (Surface Water). ^b Appropriate value of PEL, REL, or TLV listed. ^c 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. ^d PIP = photoionization potential; NA = Not applicable; UK = Unknown.					

3.6 Potential Routes of Exposure

- **Dermal:** Contact with contaminated media. This route of exposure is minimized through proper use of PPE, as specified in Section 4.
- **Inhalation:** Vapors and contaminated particulates. This route of exposure is minimized through proper respiratory protection and monitoring, as specified in Sections 4 and 5, respectively.
- **Other:** Inadvertent ingestion of contaminated media. This route should not present a concern if good hygiene practices are followed (e.g., wash hands and face before drinking or smoking).

4.0 Project Organization and Personnel

4.1 CH2M HILL Employee Medical Surveillance and Training

(Reference CH2M HILL- SOPs HS-01, *Medical Surveillance*, and HS-02, *Health and Safety Training*)

The employees listed meet state and federal hazardous waste operations requirements for 40-hour initial training, 3-day on-the-job experience, and 8-hour annual refresher training. Employees designated "SHSS" have completed a 12-hour site safety coordinator course, and have documented requisite field experience. An SHSS with a level designation (D, C, B) equal to or greater than the level of protection being used must be present during all tasks performed in exclusion or decontamination zones. Employees designated "FA-CPR" are currently certified by the American Red Cross, or equivalent, in first aid and CPR. At least one FA-CPR designated employee must be present during all tasks performed in exclusion or decontamination zones. At least two FA-CPR trained employees must be available at each job site/operation. The employees listed below are currently active in a medical surveillance program that meets state and federal regulatory requirements for hazardous waste operations. Certain tasks (e.g., confined-space entry) and contaminants (e.g., lead) may require additional training and medical monitoring.

Pregnant employees are to be informed of and are to follow the procedures in CH2M HILL-SOP HS-04, *Reproduction Protection*, including obtaining a physician's statement of the employee's ability to perform hazardous activities before being assigned fieldwork.

Employee Name	Office	Responsibility	SHSS/FA-CPR
Mike Halil	CH2M HILL	Project Manager	
Rich Rathnow	CH2M HILL	Health and Safety Manager	SC-HW,C FA-CPR

4.2 Field Team Chain of Command and Communication Procedures

4.2.1 Client: Southern Division, U.S. Navy Facilities Engineering Command (NAVFAC)

Contact Name: ACO - Eva Clement, COTR - Jimmy Jones

Phone: 843/820-5544

4.2.2 CH2M HILL

Program Manager: Scott Smith/ATL

Project Manager: Mike Halil/JAX

Health and Safety Manager: Rich Rathnow/ORO

Field Team Leader: Greg Ramey/ATL

Site Health and Safety Specialist: Greg Ramey/ATL

The CH2M HILL/CH2M HILL project manager (PM) is responsible for providing adequate resources (budget and staff) for project-specific implementation of the HS&E management process. The PM has overall management responsibility for the tasks listed below. The PM 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 SOP:

- 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 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 CH2M HILL as named additional insured), bond, contractors 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 interfacing with 3rd parties in a manner consistent with our contract and subcontract agreements and the applicable standard of reasonable care
- Ensure that the overall, job-specific, HS&E goals are fully and continuously implemented

The CH2M HILL H&S Manager is responsible for:

- 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 SHSS's oversight of subcontractor (and lower-tier subcontractors) HS&E practices and interfaces with on-site 3rd parties per the site-specific safety plan

The SHSS 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 CH2M HILL site personnel and subcontractor personnel read this HSP and sign Attachment 1 “Employee Signoff Form” prior to commencing field activities
- Verify 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
- Verify compliance with the requirements of this HSP and applicable subcontractor health and safety plan(s)
- Act as the project “Hazard Communication Coordinator” and perform the responsibilities outlined in Section 2.2.2
- Act as the project “Emergency Response Coordinator” and perform the responsibilities outlined in Section 4
- Post OSHA job-site poster; the poster is required at sites where project field offices, trailers, or equipment-storage boxes are established; posters can be obtained by calling 800/548-4776 or 800/999-9111
- Verify that safety meetings are conducted and documented in the project file initially and as needed throughout the course of the project (e.g., as tasks or hazards change)
- Verify that project H&S forms and permits, found in Attachment 5, are being used as outlined in Section 2
- Perform oversight and/or assessments of subcontractor HS&E practices per the site-specific safety plan and verify that project activity self-assessment checklists, found in Attachment 5, are being used as outlined in Section 2
- Verify that project files available to site personnel include copies of executed subcontracts and subcontractor certificates of insurance (including CH2M HILL as named additional insured), bond, contractors license, training and medical monitoring records, and site-specific safety procedures prior to start of subcontractor’s field operations
- Manage the site and interfacing with 3rd parties in a manner consistent with our contract/subcontract agreements and the applicable standard of reasonable care
- Coordinate with the HS&E manager regarding CH2M HILL and subcontractor operational performance, and 3rd party interfaces
- Ensure that the overall, job-specific, HS&E goals are fully and continuously implemented

The training required for the SHSS is as follows:

- SHSS 10 hour course

- OSHA 10 hour course for Construction
- First Aid and CPR
- Relevant Competent Person Courses (excavation, confined space, scaffold, fall protection, etc.)

The SHSS is responsible for contacting the Field Team Leader and Project Manager. In general, the Project Manager will contact the client. The Health and Safety Manager should be contacted as appropriate.

4.2.3 CH2M HILL Subcontractors

(Reference CH2M HILL- SOP HS-55, *Subcontractor, Contractor, and Owner*)

Subcontractor: Murphy Pipeline Contractors

Subcontractor Contact Name: Andy Mayer

Address: 11243-4 St. Johns, Industrial Parkway, Jacksonville, FL 32246

Telephone: 904 635-2214 (cell)
904 620-9702 (office)

Certain subcontractors (drilling, remedial and construction contractors) are required to be pre-qualified for safety by completing the Subcontractor Safety Performance Questionnaire. The subcontractors listed above are covered by this HSP. However, this plan does not address hazards associated with the tasks and equipment that the subcontractor has expertise in (e.g., drilling, excavation work, electrical). Subcontractors are responsible for the health and safety procedures specific to their work, and are required to submit these procedures to CH2M HILL for review before the start of field work by following the Subcontractor Safety Procedure Criteria specific to their work.

Subcontractors are also required to prepare Activity Hazard Analysis before beginning each activity posing H&S hazards to their personnel using the AHA form provided in Attachment 6 as a guide. The AHA shall identify the principle steps of the activity, potential H&S hazards for each step and recommended control measures for each identified hazard. In addition, a listing of the equipment to be used to perform the activity, inspection requirements and training requirements for the safe operation of the equipment listed must be identified.

Subcontractors must comply with the established health and safety plan(s). The CH2M HILL SHSS should verify that subcontractor employee training, medical clearance, and fit test records are current and must monitor and enforce compliance with the established plan(s). CH2M HILL oversight does not relieve subcontractors of their responsibility for effective implementation and compliance with the established plan(s).

CH2M HILL should continuously endeavor to observe subcontractors' safety performance. This endeavor should be reasonable, and include observing for hazards or unsafe practices that are both readily observable and occur in common work areas. CH2M HILL is not responsible for exhaustive observation for hazards and unsafe practices. In addition to this level of observation, the SHSS is responsible for confirming CH2M HILL subcontractor performance against both the subcontractor's safety plan and applicable self-assessment

checklists. **Self-assessment checklists** contained in **Attachment 5** are to be used by the SHSS to review subcontractor performance.

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

- Brief subcontractors on the provisions of this plan, and require them to sign the Employee Signoff Form included in Attachment 1.
- Request subcontractor(s) to brief project team on the hazards and precautions related to their work.
- When apparent non-compliance/unsafe conditions or practices are observed, notify the subcontractor safety representative and require corrective action – the subcontractor is responsible for determining and implementing necessary controls and corrective actions.
- When repeat non-compliance/unsafe conditions are observed, notify the subcontractor safety representative and stop affected work until adequate corrective measures are implemented.
- When an apparent imminent danger exists, immediately remove all affected CH2M HILL employees and subcontractors, notify subcontractor safety representative, and stop affected work until adequate corrective measures are implemented. Notify the Project Manager and HSM as appropriate.
- Document all oral health and safety related communications in project field logbook, daily reports, or other records.

5.0 Personal Protective Equipment (PPE)

(Reference CH2M HILL- SOP HS-07, *Personal Protective Equipment*, HS-08, *Respiratory Protection*)

PPE Specifications ^a

Task	Level	Body	Head	Respirator ^b
<ul style="list-style-type: none"> Mobilization and site preparation Oversight of remediation and construction Utility locate 	D	Work clothes; steel-toe, leather work boots; work glove.	Hardhat ^c Safety glasses Ear protection ^d	None required
<ul style="list-style-type: none"> Inspect underground piping Cap underground piping Site restoration T&D of contaminated materials Excavation 	Modified D	Work clothes or cotton coveralls Boots: Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers Gloves: Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat ^c Safety glasses Ear protection ^d	None required
<ul style="list-style-type: none"> Disconnect/cold cut piping Removal residual fuel Pipeline Pigging 	Modified D	Coveralls: Uncoated Tyvek® Boots: Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers Gloves: Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat ^c Splash shield ^c Safety glasses Ear protection ^d	None required.
Tasks requiring upgrade: <ul style="list-style-type: none"> Disconnect/cold cut piping Removal residual fuel Pipeline Pigging 	C	Coveralls: Polycoated Tyvek® Boots: Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers Gloves: Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat ^c Splash shield ^c Ear protection ^d Spectacle inserts	APR, full face, MSA Ultratwin or equivalent; with GME-H cartridges or equivalent ^e .
Tasks requiring upgrade	B	Coveralls: Polycoated Tyvek® Boots: Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers Gloves: Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat ^c Splash shield ^c Ear protection ^d Spectacle inserts	Positive-pressure demand self-contained breathing apparatus (SCBA); MSA Ultralite, or equivalent.

Reasons for Upgrading or Downgrading Level of Protection

Upgrade ^f	Downgrade
<ul style="list-style-type: none"> Request from individual performing tasks. Change in work tasks that will increase contact or potential contact with hazardous materials. Occurrence or likely occurrence of gas or vapor emission. Known or suspected presence of dermal hazards. Instrument action levels (Section 5) exceeded. 	<ul style="list-style-type: none"> New information indicating that situation is less hazardous than originally thought. Change in site conditions that decreases the hazard. Change in work task that will reduce contact with hazardous materials.

^a Modifications are as indicated. CH2M HILL will provide PPE only to CH2M HILL employees.

^b No facial hair that would interfere with respirator fit is permitted.

^c Hardhat and splash-shield areas are to be determined by the SHSS.

^d Ear protection should be worn when conversations cannot be held at distances of 3 feet or less without shouting.

^e Cartridge change-out schedule is at least every 8 hours (or one work day), except if relative humidity is > 85%, or if organic vapor measurements are > midpoint of Level C range (refer to Section 5)--then at least every 4 hours. If encountered conditions are different than those anticipated in this HSP, contact the HSM.

^f Performing a task that requires an upgrade to a higher level of protection (e.g., Level D to Level C) is permitted only when the PPE requirements have been approved by the HSM, and an SHSS qualified at that level is present.

6.0 Air Monitoring/Sampling

(Reference CH2M HILL- SOP HS-06, *Air Monitoring*)

6.1 Air Monitoring Specifications

Instrument	Tasks	Action Levels ^a		Frequency ^b	Calibration
PID: OVM with 10.6eV lamp or equivalent	Disconnect/cold cut piping Removal residual fuel Pipeline Pigging	<1 ppm 1-5 ppm > 5 ppm	Level D Level C Take benzene tube reading or ventilate and wait until level dissipates to <1ppm Contact HSM for direction	Initially and periodically during task	Daily
CGI: MSA model 260 or 261 or equivalent	Disconnect/cold cut piping Removal residual fuel Pipeline Pigging	0-10% : 10-25% LEL: >25% LEL:	No explosion hazard Potential explosion hazard Explosion hazard; evacuate or vent	Continuous during advancement of boring or trench	Daily
O₂ Meter: MSA model 260 or 261 or equivalent	Disconnect/cold cut piping Removal residual fuel Pipeline Pigging	>25% ^c O ₂ : 20.9% ^c O ₂ : <19.5% ^c O ₂ :	Explosion hazard; evacuate or vent Normal O ₂ O ₂ deficient; vent or use SCBA	Continuous during advancement of boring or trench	Daily
Dust Monitor: Miniram model PDM-3 or equivalent	All soil intrusive and dust generating activities	0-1 mg/m ³ >1 mg/m ³	Level D Level C	Initially and periodically during tasks	Zero Daily
Detector Tube: Drager benzene specific 0.5/c (0.5 to 10 ppm range) with pre-tube, or equivalent	All soil intrusive activities where PID readings are greater than 1 ppm.	<0.5 ppm 0.5-1 ppm >1 ppm	Level D Level C Level B	Initially and periodically when PID/FIB >1 ppm	Not applicable
Nose-Level Monitor^e:	Long term noise generating activities	<85 dB(A) 85-120 dB(A) 120 dB(A)	No action required Hearing protection required Stop; re-evaluate	Initially and periodically during task	Daily

^a Action levels apply to sustained breathing-zone measurements above background.

^b The exact frequency of monitoring depends on field conditions and is to be determined by the SHSS; 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.).

^c If the measured percent of O₂ is less than 10, an accurate LEL reading will not be obtained. Percent LEL and percent O₂ action levels apply only to ambient working atmospheres, and not to confined-space entry. More-stringent percent LEL and O₂ action levels are required for confined-space entry (refer to Section 2).

^d Refer to SOP HS-10 for instructions and documentation on radiation monitoring and screening.

^e Noise monitoring and audiometric testing also required.

6.2 Calibration Specifications

(Refer to the respective manufacturer's instructions for proper instrument-maintenance procedures)

Instrument	Gas	Span	Reading	Method
PID: OVM, 10.6 or 11.8 eV bulb	100 ppm isobutylene	RF = 1.0	100 ppm	1.5 lpm reg T-tubing
PID: MiniRAE, 10.6 eV bulb	100 ppm isobutylene	CF = 100	100 ppm	1.5 lpm reg T-tubing
PID: TVA 1000	100 ppm isobutylene	CF = 1.0	100 ppm	1.5 lpm reg T-tubing
FID: OVA	100 ppm methane	3.0 ± 1.5	100 ppm	1.5 lpm reg T-tubing
FID: TVA 1000	100 ppm methane	NA	100 ppm	2.5 lpm reg T-tubing
Dust Monitor: Miniram-PDM3	Dust-free air	Not applicable	0.00 mg/m ³ in "Measure" mode	Dust-free area OR Z-bag with HEPA filter
CGI: MSA 260, 261, 360, or 361	0.75% pentane	N/A	50% LEL ± 5% LEL	1.5 lpm reg direct tubing

6.3 Air Sampling

Sampling, in addition to real-time monitoring, may be required by other OSHA regulations where there may be exposure to certain contaminants. Air sampling typically is required when site contaminants include lead, cadmium, arsenic, asbestos, and certain volatile organic compounds. Contact the HSM immediately if these contaminants are encountered.

Method Description

N/A

Personnel and Areas

Results must be sent immediately to the HSM. Regulations may require reporting to monitored personnel. Results reported to HSM, Rich Rathnow, CIH.

7.0 Decontamination

(Reference CH2M HILL- SOP HS-13, *Decontamination*)

The SHSS must establish and monitor the decontamination procedures and their effectiveness. Decontamination procedures found to be ineffective will be modified by the SHSS. The SHSS must ensure that procedures are established for disposing of materials generated on the site.

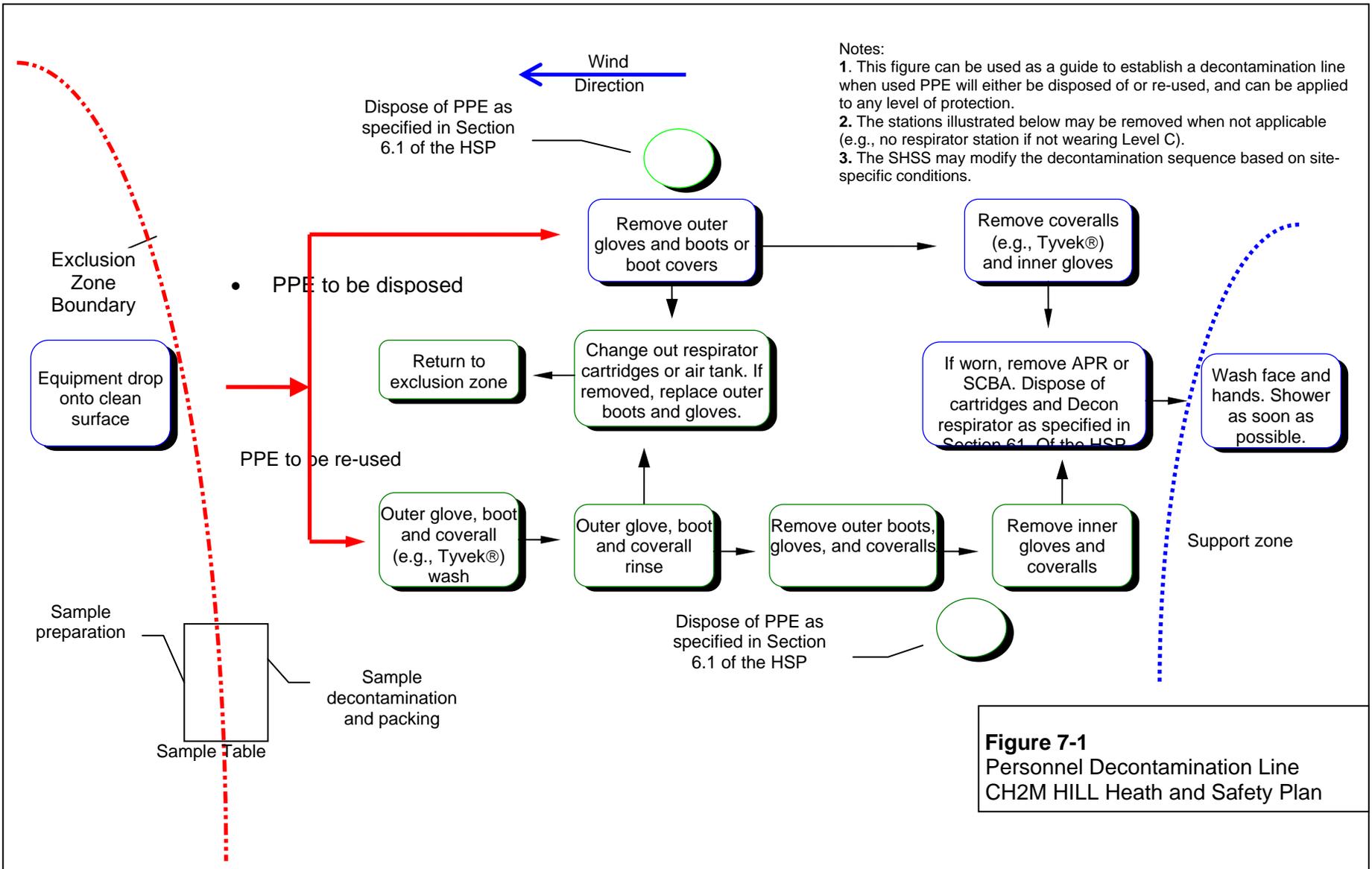
7.1 Decontamination Specifications

Personnel	Sample Equipment	Heavy Equipment
<ul style="list-style-type: none">• Boot wash/rinse• Glove wash/rinse• Outer-glove removal• Body-suit removal• Inner-glove removal• Respirator removal• Hand wash/rinse• Face wash/rinse• Shower ASAP• Dispose of PPE in municipal trash, or contain for disposal• Dispose of personnel rinse water to facility or sanitary sewer, or contain for offsite disposal	<ul style="list-style-type: none">• Wash/rinse equipment• Solvent-rinse equipment• Contain solvent waste for offsite disposal	<ul style="list-style-type: none">• Power wash• Steam clean• Dispose of equipment rinse water to facility or sanitary sewer, or contain for offsite disposal

7.2 Diagram of Personnel-Decontamination Line

No eating, drinking, or smoking is permitted in contaminated areas and in exclusion or decontamination zones. The SHSS should establish areas for eating, drinking, and smoking. Contact lenses are not permitted in exclusion or decontamination zones.

Figure 7-1 illustrates a conceptual establishment of work zones, including the decontamination line. Work zones are to be modified by the SHSS to accommodate task-specific requirements.



8.0 Spill-Containment Procedures

Sorbent material will be maintained in the support zone. Incidental spills will be contained with sorbent and disposed of properly.

9.0 Site Control Plan

9.1 Site Control Procedures

(Reference CH2M HILL- SOP HS-11, *Site Control*)

- The SHSS will conduct a site safety briefing (see below) 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 SHSS records attendance at safety briefings in a logbook and documents the topics discussed.
- Post the OSHA job-site poster in a central and conspicuous location in accordance with CH2M HILL- SOP HS-71, *OSHA Postings*.
- Field Trailers: Post “Exit” signs above exit doors, and post “Fire Extinguisher” signs above locations of extinguishers. Keep areas near exits and extinguishers clear.
[Covered in 10.1]
- 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.
- 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.”
- Initial air monitoring is conducted by the SHSS in appropriate level of protection.
- The SCC is to conduct periodic inspections of work practices to determine the effectiveness of this plan – refer to Sections 2 and 3. Deficiencies are to be noted, reported to the HSM, and corrected.

9.2 Hazwoper Compliance Plan

(Reference CH2M HILL- SOP HS-19, *Site-Specific Written Safety Plans*)

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 1.1.1) might occur consecutively or concurrently with respect to non-Hazwoper

tasks. This section outlines procedures to be followed when approved activities specified in Section 1.1.2 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 HSM must approve the interpretation of these data. Refer to subsections 2.5 and 5.3 for contaminant data and air sampling requirements, respectively.
- When non-Hazwoper-trained personnel are at risk of exposure, the SHSS must post the exclusion zone and inform non-Hazwoper-trained personnel of the:
 - 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 contaminants.
- 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.
- Remediation treatment system start-ups: Once a treatment system begins to pump and treat contaminated media, the site is, for the purposes of applying the Hazwoper standard, considered a treatment, storage, and disposal facility (TSDF). Therefore, once the system begins operation, only Hazwoper-trained personnel (minimum of 24 hour of training) will be permitted to enter the site. All non-Hazwoper-trained personnel must not enter the TSDF area of the site.

10.0 Emergency Response Plan

(Reference CH2M HILL- SOP HS-12, *Emergency Response*)

10.1 Pre-Emergency Planning

The SHSS performs the applicable pre-emergency planning tasks before starting field activities and coordinates emergency response with CH2M HILL onsite parties, the facility, and local emergency-service providers as appropriate.

- 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.
- Post site map marked with locations of emergency equipment and supplies, and post OSHA job-site poster. The OSHA job-site poster is required at sites where project field offices, trailers, or equipment-storage boxes are established. Posters can be obtained by calling either 800/548-4776 or 800/999-9111.
- Field Trailers: Post “Exit” signs above exit doors, and post “Fire Extinguisher” signs above locations of extinguishers. Keep areas near exits and extinguishers clear.
- 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 SHSS will evaluate emergency response actions and initiate appropriate follow-up actions.

10.2 Emergency Equipment and Supplies

The SHSS should mark the locations of emergency equipment on the site map and post the map.

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 & Decon Zone/Field Vehicle
Potable water	Support & Decon Zone/Field Vehicle
Bloodborne-pathogen kit	Support Zone/Field Vehicle
Additional equipment (specify):	

10.3 Incident Reporting, Investigation and Response

For any accident meeting the definition of **Recordable Occupational Injuries or Illnesses or Significant Accidents**, the Southern Division, NAVFAC Contracting Officer and Navy Technical Representative (NTR) shall be notified by the HSM or Program Manager soon as practical, **but not later than four hours after occurrence**. All other incidents must be reported to Southern Division, NAVFAC within 24 hours of incident occurrence.

Therefore in order for the incident to be assessed for reportability purposes it is imperative that according to CH2M HILL requirements, **all personal injuries, near-misses, or property damage incidents involving CH2M HILL or subcontractor project personnel be reported IMMEDIATELY to the HSM Rich Rathnow/ORO, Program Manager Scott Newman/ATL, or CH2M HILL Corporate HSM Angelo Liberatore/ATL at the numbers identified in the emergency contact attachment contained in this plan.**

The Site Manager or designee must report the following incident information to the HSM immediately after incident occurrence:

- Date and time of mishap
- Project name and project number
- Name and worker classification
- Extent of known injuries
- Level of medical attention
- Injury cause

A written incident investigation shall be performed and submitted to the HSM 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 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, note that small fires or spills posing minimal safety or health hazards may be controlled.

10.4 Emergency Medical Treatment

The procedures listed below may also be applied to non-emergency incidents. CH2M HILL employee injuries and illnesses must be reported to the Human Resource contact in Attachment 4. If there is doubt about whether medical treatment is necessary, or if the injured person is reluctant to accept medical treatment, contact the CH2M HILL medical consultant, depending on whose employee is injured. During non-emergencies, follow these procedures as appropriate.

- Notify appropriate emergency response authorities listed in Section 9.8 (e.g., 911).
- The SHSS 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.
- Initiate first aid and CPR where feasible.
- Get medical attention immediately.
- Perform decontamination where feasible; lifesaving and first aid or medical treatment take priority.
- 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 9.7.

10.5 Evacuation

- Evacuation routes and assembly areas (and alternative routes and assembly areas) are specified on the site map.
- Evacuation route(s) and assembly area(s) will be designated by the SHSS before work begins.
- Personnel will assemble at the assembly area(s) upon hearing the emergency signal for evacuation.
- The SHSS 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 SHSS will account for all personnel in the onsite assembly area.
- A designated person will account for personnel at alternate assembly area(s).
- The SHSS will write up the incident as soon as possible after it occurs and submit a report to the Corporate Director of Health and Safety.

10.6 Evacuation Signals

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, injury, near miss, death, etc.), immediately notify the PM and HSM. Call emergency beeper number if HSM is unavailable.
- For CH2M HILL work-related injuries or illnesses, contact the respective Human Resources contact listed in Attachment 4. For CH2M HILL incidents the HR administrator completes an Incident Report Form (IRF). IRF must be completed within 24 hours of incident.
- For CH2M HILL subcontractor incidents, complete the Subcontractor Accident/Illness Report Form and submit to the HSM.
- Notify and submit reports to client as required in contract.

11.0 Behavior Based Loss Prevention System

A Behavior Based Loss Prevention System (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 on EE&S CH2M HILL projects to implement the BBLPS include:

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

The Site Supervisor serves as the Site Health and Safety Specialist (SHSS) and is responsible for implementing the BBLPS on the project site. When a separate individual is assigned as the SHSS, the SHSS is delegated authority from the Site Supervisor to implement the BBLPS on the project site, but the Site Supervisor remains accountable for its implementation. The Site Supervisor/Safety Coordinator shall only oversee the subcontractor's implementation of their AHAs and PTSPs processes on the project.

11.1 Activity Hazard Analysis

An Activity Hazard Analysis (AHA) defines the activity being performed, the hazards posed and control measures required to perform the work safely. Workers are briefed on the AHA before doing the work and their input is solicited prior, during and after the performance of work to further identify the hazards posed and control measures required.

Activity Hazard Analysis will be prepared before beginning each project activity posing H&S hazards to project personnel using the AHA form provided in **Attachment 6**. The AHA shall identify the work tasks required to perform each activity, along with potential H&S hazards and recommended control measures for each work task. In addition, a listing of the equipment to be used to perform the activity, inspection requirements and training requirements for the safe operation of the equipment listed must be identified.

An AHA shall be prepared for all field activities performed by CH2M HILL and subcontractor during the course of the project by the Site Supervisor/SHSS. The Project-Specific and General Hazards (Sections 2.1 and 2.2, respectively) of the HSP, the Hazard Analysis Table (Table 2.1), and applicable CH2M Hill Standards of Practice (SOPs) should be used as a basis for preparing CH2M HILL's AHAs.

CH2M HILL subcontractors are required to provide AHA's specific to their scope of work on the project for acceptance by CH2M HILL. Each subcontractor shall submit AHAs for their field activities, as defined in their work plan/scope of work, along with their project-

specific HSP. Additions or changes in CH2M HILL or subcontractor field activities, equipment, tools or material to perform work or additional/different hazard encountered that require additional/different hazard control measures requires either a new AHA to be prepared or an existing AHA to be revised.

11.2 Pre-Task Safety Plans

Daily safety meetings are held with all project personnel in attendance to review the hazards posed and required H&S procedures/JSA's, that apply for each day's project activities. The PTSPs serve the same purpose as these general assembly safety meetings, but the PTSPs are held between the crew supervisor and their work crews to focus on those hazards posed to individual work crews. At the start of each day's activities, the crew supervisor completes the PTSP, provided in **Attachment 6**, with input from the work crew, during their daily safety meeting. The day's tasks, personnel, tools and equipment that will be used to perform these tasks are listed, along with the hazards posed and required H&S procedures, as identified in the AHA. The use of PTSPs, better promotes worker participation in the hazard recognition and control process, while reinforcing the task-specific hazard and required H&S procedures with the crew each day. The use of PTSPs is a common safety practice in the construction industry.

11.3 Loss Prevention Observations

Loss Prevention Observations (LPO's) shall be conducted by Site Supervisor/SHSS for specific work tasks or operations comparing the actual work process against established safe work procedures identified in the project-specific HSP and AHAs. LPO's are a tool to be used by supervisors to provide positive reinforcement for work practices performed correctly, while also identifying and eliminating deviations from safe work procedures that could result in a loss. Site Supervisor/SHSS shall perform at least one LPO each week for a tasks/operations addressed in the project-specific HSP or AHA. The Site Supervisor/SHSS shall complete the LPO form in **Attachment 6** for the task/operation being observed.

11.4 Loss/Near Loss Investigations

Loss/Near Loss Investigations shall be performed for the all CH2M HILL and subcontractor incidents involving:

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

The cause of loss and near loss incidents is similar, so by identifying and correcting the causes of near loss causes, 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, pitting 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.
- Filed follow-up on implemented corrective active action to confirm solution is appropriate.

Site Supervisors/SHSS shall 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 shall be performed using the following incident investigation forms provided in **Attachment 6**:

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

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

12.0 Approval

This site-specific Health and Safety Plan has been written for use by CH2M HILL only. 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.

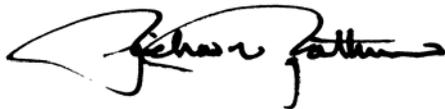
12.1 Original Plan

Written By: Rich Rathnow

Date: 11-22-05

Approved By: Rich Rathnow

Date: 11-22-05



12.2 Revisions

Revisions Made By:

Revisions to Plan:

Revisions Approved By:

CH2MHILL**CHEMICAL-SPECIFIC TRAINING FORM-ATTACHMENT 3**

Location:	Project # :
HCC:	Trainer:

TRAINING PARTICIPANTS:

NAME	SIGNATURE	NAME	SIGNATURE

REGULATED PRODUCTS/TASKS COVERED BY THIS TRAINING:

The HCC shall 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 shall 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 CH2M HILL's written hazard communication program shall be made available for employee review in the facility/project hazard communication file.

Emergency Contacts-ATTACHMENT 4

24-hour CH2M HILL Emergency Beeper – 888/444-1226

Medical Emergency – 911

Facility Medical Response #:
Local Ambulance #:

CH2M HILL- Medical Consultant

Dr. Jerry H. Berke, M.D., M.P.H.
Health Resources
600 West Cummings Park, Suite 3400
Woburn, MA 01801-6350
781/938-4653
800/350-4511
(After hours calls will be returned within 20 minutes)

Fire/Spill Emergency -- 911

Facility Fire Response #:
Local Fire Dept #:

Local Occupational Physician

Security & Police – 911

Facility Security #:
Local Police #:

Navy RAC Program Manager

Name: Scott Smith/ATL
Phone: 770/604/9182

Utilities Emergency

Water:
Gas:
Electric:

Navy RAC Health and Safety Manager (HSM)

Name: Rich Rathnow/ORO
Phone: 865/483-9005 (Office); 865/607-6734 (Cell)
865/531-2933 (Home)

Site Health and Safety Specialist (SHSS)

Name: TBD

CH2M HILL Human Resources Department

Name: Nancy Orr/COR
Phone: 303/771-0952

Project Manager

Name: Mike Halil/CH2M HILL/JAX
904-777-4812

Corporate Human Resources Department

Name: John Monark/COR
Phone: 303/771-0900

Federal Express Dangerous Goods Shipping

Phone: 800/238-5355

Emergency Number for Shipping Dangerous Goods

Phone: 800/255-3924

CH2M HILL Worker's Compensation and Auto Claims

Sterling Administration Services
Phone: 800/420-8926 After hours: 800/497-4566

Report fatalities AND report vehicular accidents involving pedestrians, motorcycles, or more than two cars.

Contact the Project Manager. Generally, the Project Manager will contact relevant government agencies.

Facility Alarms:

Evacuation Assembly Area(s):

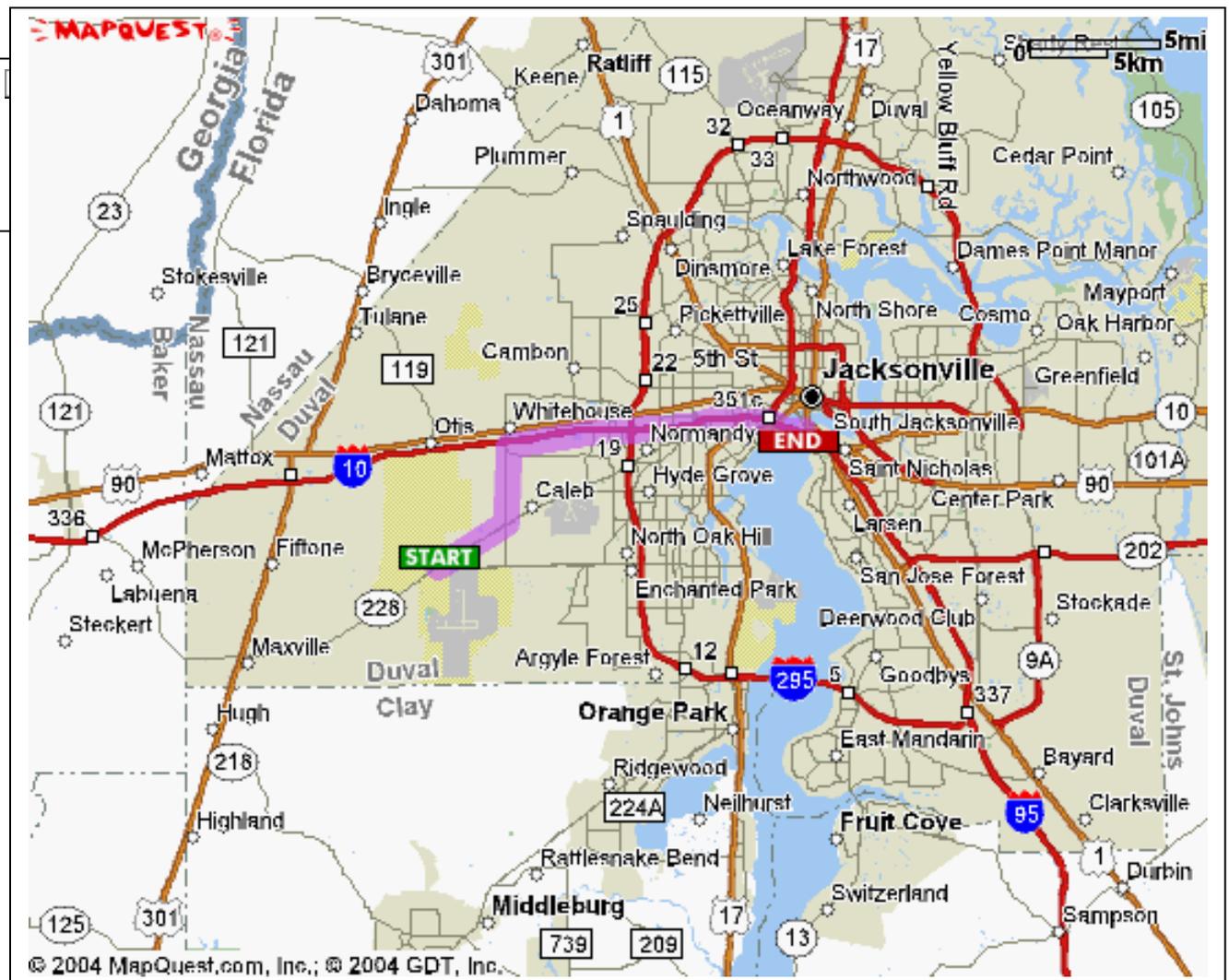
Facility/Site Evacuation Route(s):

Hospital Name/Address: Shands Jacksonville
655 West Eighth St., Jacksonville, Fla. 32209

Hospital Phone #: Hospital Phone #: (904) 244-0411

Directions to Hospital

- 1: Start out going Northeast on NORMANDY BLVD/FL-228 E toward FL-134 W/103RD ST. 2.9 mi.
- 2: Turn LEFT onto CHAFFEE RD S/CR-115C. 2.7 miles
- 3: Merge onto I-10 E. 10.0 miles
- 4: Merge onto I-95 S toward JAX BEACHES/DAYTONA BEACH. 0.9 miles
- 5: Take the PALM AVE exit- exit number 350B- toward SAN MARCO BLVD. 0.4 miles
- 6: Turn LEFT onto PALM AVE. 0.1 miles
- 7: Turn LEFT onto PRUDENTIAL DR. 0.1 miles
- 8: End at 800 Prudential Dr Jacksonville FL



CH2M HILL HEALTH AND SAFETY PLAN

Attachment 5

Project Activity Self-Assessment Checklists/Permits

- **Hand and Power Tools**
- **Lockout/Tagout**

CH2MHILL

H&S Self-Assessment Checklist – HAND AND POWER TOOLS

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project’s HSP/FSI.

This checklist is to be used at locations where: 1) CH2M HILL employees are exposed to hand and power tool hazards and/or 2) CH2M HILL provides oversight of subcontractor personnel who are exposed to hand and power tool hazards.

SSC or DSC may consult with subcontractors when completing this checklist, but shall not direct the means and methods of hand and power tool use nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the HS&E Staff for review.

Project Name: _____ Project No.: _____

Location: _____ PM: _____

Auditor: _____ Title: _____ Date: _____

This specific checklist has been completed to:

Evaluate CH2M HILL employee exposure to hand and power tool hazards.

Evaluate a CH2M HILL subcontractor’s compliance with hand and power tool requirements.

Subcontractors Name: _____

- Check “Yes” if an assessment item is complete/correct.
 - Check “No” if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 3 must be completed for all items checked “No.”
 - Check “N/A” if an item is not applicable.
 - Check “N/O” if an item is applicable but was not observed during the assessment.
- Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-50.

<u>SECTION 1</u>		<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>N/O</u>
SAFE WORK PRACTICES (3.1)					
1.	All tools operated according to manufacturer’s instructions and design limitations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	All hand and power tools maintained in a safe condition and inspected and tested before use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Defective tools are tagged and removed from service until repaired.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	PPE is selected and used according to tool-specific hazards anticipated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	Power tools are not carried or lowered by their cord or hose.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	Tools are disconnected from energy sources when not in use, servicing, cleaning, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	Safety guards remain installed or are promptly replaced after repair.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	Tools are stored properly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Cordless tools and recharging units both conform to electrical standards and specifications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	Tools used in explosive environments are rated for such use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.	Knife or blade hand tools are used with the proper precautions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.	Consider controls to avoid muscular skeletal, repetitive motion, and cumulative trauma stressors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CH2MHILL

H&S Self-Assessment Checklist – HAND AND POWER TOOLS

<u>SECTION 2</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>N/O</u>
GENERAL (3.2.1)				
13. PPE is selected and used according to tool-specific hazards anticipated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Tools are tested daily to assure safety devices are operating properly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Damaged tools are removed from service until repaired.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Power operated tools designed to accommodate guards have guards installed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Rotating or moving parts on tools are properly guarded.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Machines designed for fixed locations are secured or anchored.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Floor and bench-mounted grinders are provided with properly positioned work rests.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Guards are provided at point of operation, nip points, rotating parts, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Fluid used in hydraulic-powered tools is approved fire-resistant fluid.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ELECTRIC-POWERED TOOLS (3.2.2)				
22. Electric tools are approved double insulated or grounded and used according to SOP HS-23.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Electric cords are not used for hoisting or lowering tools.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Electric tools are used in damp/ wet locations are approved for such locations or GFCI installed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Hand-held tools are equipped with appropriate on/off controls appropriate for the tool.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Portable, power-driven circular saws are equipped with proper guards.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ABRASIVE WHEEL TOOLS (3.2.3)				
27. All employees using abrasive wheel tools are wearing eye protection.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. All grinding machines are supplied with sufficient power to maintain spindle speed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Abrasive wheels are closely inspected and ring-tested before use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Grinding wheels are properly installed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Cup-type wheels for external grinding are protected by the proper guard or flanges.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Portable abrasive wheels used for internal grinding are protected by safety flanges.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Safety flanges are used only with wheels designed to fit the flanges.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Safety guards on abrasive wheel tools are mounted properly and of sufficient strength.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PNEUMATIC-POWERED TOOLS (3.2.4)				
35. Tools are secured to hoses or whip by positive means to prevent disconnection.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. Safety clips or retainers are installed to prevent attachments being expelled. Safety devices are installed on automatic fastener feed tools as required.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 37.
38. Compressed air is not used for cleaning unless reduced to < 30 psi, with PPE, and guarded.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Manufacturer's safe operating pressure for hoses, pipes, valves, etc. are not exceeded.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Hoses are not used for hoisting or lowering tools.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. All hoses >1/2-inch diameter have safety device at source to reduce pressure upon hose failure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Airless spray guns have required safety devices installed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43. Blast cleaning nozzles are equipped with operating valves, which are held open manually.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44. Supports are provided for mounting nozzles when not in use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45. Air receiver drains, handholes, and manholes are easily accessible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46. Air receivers are equipped with drainpipes and valves for removal of accumulated oil and water.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47. Air receivers are completely drained at required intervals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48. Air receivers are equipped with indicating pressure gauges.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49. Safety, indicating, and controlling devices are installed as required.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
50. Safety valves are tested frequently and at regular intervals to assure good operating condition.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>SECTION 2 (continued)</u>				

Yes No N/A N/O

LIQUID FUEL-POWERED TOOLS (3.2.5)

- 51. Liquid fuel-powered tools are stopped when refueling, servicing, or maintaining.
- Liquid fuels are stored, handled, and transported in accordance with SOP HS-21
- Liquid fuel-powered tools are used in confined spaces in accordance with SOP HS-17.
- Safe operating pressures of hoses, valves, pipes, filters, and other fittings are not exceeded.

POWDER-ACTUATED TOOLS (3.2.6)

- Only trained employee operates powder-actuated tools.
- Powder-actuated tools are not loaded until just prior to intended firing time.
- Tools are not pointed at any employee at any time.
- Hands are kept clear of open barrel end.
- Loaded tools are not left unattended.
- Fasteners are not driven into very hard or brittle materials.
- Fasteners are not driven into easily penetrated materials unless suitable backing is provided.
- Fasteners are not driven into spalled areas.
- Powder-actuated tools are not used in an explosive or flammable atmosphere.
- All tools are used with correct shields, guards, or attachments recommended by manufacturer.

JACKING TOOLS (3.2.7)

- Rated capacities are legibly marked on jacks and not exceeded.
- Jacks have a positive stop to prevent over-travel.
- The base of jacks are blocked or cribbed to provide a firm foundation, when required.
- Wood blocks are place between the cap and load to prevent slippage, when required.
- After load is raised, it is cribbed, blocked, or otherwise secured immediately.
- Antifreeze is used when hydraulic jacks are exposed to freezing temperatures.
- All jacks are properly lubricated.
- Jacks are inspected as required.
- Repair or replacement parts are examined for possible defects.
- Jacks not working properly are removed from service and repaired or replaced.

HAND TOOLS (3.2.8)

- Wrenches are not used when jaws are sprung to the point of slippage.
- Impact tools are kept free of mushroomed heads.
- Wooden handles of tools are kept free of splinters or cracks and are tightly fitted in tool.

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project’s written safety plan.

This checklist is to be used when: 1) CH2M HILL staff are exposed to lockout/tagout hazards (complete Section 1), 2) CH2M HILL staff are self-performing lockout/tagout activities (completed Section 2), or 3) CH2M HILL provides oversight of subcontractor personnel who are performing lockout/tagout activities (complete Sections 1 and 2).

Safety Coordinator may consult with subcontractors when completing this checklist, but shall not direct the means and methods of lockout/tagout operations nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately, or all exposed personnel shall be removed from the hazard until corrected.

Project Name: _____	Project No.: _____
Location: _____	PM: _____
Auditor: _____	Title: _____ Date: _____
This specific checklist has been completed to: <input type="checkbox"/> Evaluate CH2M HILL affected employee exposure to equipment during lockout/tagout <input type="checkbox"/> Evaluate CH2M HILL authorized employee exposure to equipment requiring lockout/tagout <input type="checkbox"/> Evaluate a CH2M HILL subcontractor’s compliance with lockout/tagout requirements Subcontractors Name: _____	

- Check “Yes” if an assessment item is complete/correct.
 - Check “No” if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 3 must be completed for all items checked “No.”
 - Check “N/A” if an item is not applicable.
 - Check “N/O” if an item is applicable but was not observed during the assessment.
- Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HSE-33.

<u>SECTION 1</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
<u>N/O</u>			
SAFE WORK PRACTICES (4.1)			
1. Only trained and authorized personnel are performing lockout/tagout activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. All affected employees notified prior to lockout/tagout activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Equipment has been shutdown using normal operating controls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Employees do not attempt to start, energize or use equipment that is locked out or tagged	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Employees do not remove locks or tags placed on equipment by other personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Affected employees are notified after lockout/tagout is completed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Employees verify that all safe guards have been replaced prior to equipment start-up	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>SECTION 2</u> <u>N/O</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>N/A</u>
GENERAL (4.2.1)				
8. Only trained and authorized personnel are performing lockout/tagout activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Daily safety briefing/meeting conducted with affected and authorized employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Employees made aware of any equipment-specific lockout/tagout procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Authorized employees provided with lockout devices, locks, tags and other isolation devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. New or modified equipment designed to accept lockout devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
INITIATING LOCKOUT/TAGOUT (LOTO) CONTROL (4.2.2)				
13. LOTO procedures available when required to be documented	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Equipment-specific LOTO procedures developed when not available from the facility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Affected employees notified that equipment will be shut down for LOTO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Energy sources, hazards, and control measures determined	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Orderly shutdown of equipment is conducted that does not increase hazards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Energy isolating devices operated to isolate energy sources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Authorized employees apply personal lockout devices and tags to energy isolating device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Lockout devices are applied to secure equipment in the “off” position	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Lockout tags applied to clearly indicate that operating the equipment is prohibited	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Tags are located as close to or at the energy isolating device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. All hazardous stored or residual energy is relieved, disconnected or restrained.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Isolation of energy sources has been verified (tested) prior to of work on equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Lockout tags are used alone only where lockout devices cannot be applied	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LOCKOUT DEVICES AND TAGS (4.2.3)				
26. Lockout devices and tags only used to isolate energy sources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Lockout devices and tags are standardized by color, shape, size, print, and format	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Lockout devices and tags indicate identity of employee applying the devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Lockout devices and tags capable of withstanding anticipated environmental conditions of use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Lockout devices are substantial enough to prevent removal without the use of excessive force	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Tags and their means of attachment are substantial enough to prevent inadvertent removal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Tags are legible and understandable by all employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Tags warn against hazardous conditions if equipment is energized	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RELEASING LOTO CONTROL (4.2.4)				
34. Work area inspected prior to removing LOTO devices and reenergization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. LOTO devices only removed by authorized employees who applied the device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. If employee not available to remove LOTO devices, steps in Section 4.2.4 of SOP followed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. All affected employees notified prior to starting equipment previously locked or tagged out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GROUP LOTO (4.2.5)				
38. Group LOTO procedures followed when more than one employees is to work on equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Primary authorized person assigned to coordinate LOTO process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Normal steps for initiating LOTO control completed as above	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. Primary authorized person applies own lockout device and tag	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Each authorized person applies own lockout device and tag	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43. Primary authorized person removes LOTO devices after all other LOTO devices are removed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SPECIAL CONDITIONS (4.2.6)				
44. Shift or personnel changes coordinated to ensure LOTO protection is always provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45. Procedures followed when LOTO devices are temporarily removed to test or reposition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CH2M HILL HEALTH AND SAFETY PLAN

Attachment 6

Behavior Based Loss Prevention System Forms

Activity Hazard Analysis

Pre-Task Safety Plans

Loss Prevention Observation

Incident Report and Investigation

Attachment 6

Behavior Based Loss Prevention System Forms

- **Activity Hazard Analysis**
- **Pre-Task Safety Plans**
- **Loss Prevention Observation**
- **Incident Report and Investigation**

PRINT

SIGNATURE

Supervisor Name:

Date/Time: _____

Safety Officer Name:

Date/Time: _____

Employee Name(s):

Date/Time: _____

12.3 CH2MHILL

PRE-TASK SAFETY PLAN

Project: _____ Location: _____ Date: _____

Supervisor: _____ Emergency Number(s): _____

Brief Job Descriptions:

1. _____
2. _____
3. _____
4. _____
5. _____

List Specific Tasks for the Jobs (Match number from above).

1. _____
2. _____
3. _____
4. _____
5. _____

Tools/Equipment required for Tasks, (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools)match number from above:

1. _____
2. _____
3. _____
4. _____
5. _____

Potential H&S Hazards, including chemical, physical, safety, biological and environmental (Check all that apply and review exposures as they will be encountered in the tasks above):

<input type="checkbox"/> Chemical burns/contact	<input type="checkbox"/> Trench, excavations, cave-ins	<input type="checkbox"/> Ergonomics
<input type="checkbox"/> Pressurized lines/equipment	<input type="checkbox"/> Overexertion	<input type="checkbox"/> Chemical splash
<input type="checkbox"/> Thermal burns	<input type="checkbox"/> Pinch points	<input type="checkbox"/> Poisonous plants/insects
<input type="checkbox"/> Electrical	<input type="checkbox"/> Cuts/abrasions	<input type="checkbox"/> Eye hazards/flying projectile
<input type="checkbox"/> Weather conditions	<input type="checkbox"/> Spills	<input type="checkbox"/> Inhalation hazard
<input type="checkbox"/> Heights/fall > 6'	<input type="checkbox"/> Overhead Electrical hazards	<input type="checkbox"/> Heat/cold stress
<input type="checkbox"/> Noise	<input type="checkbox"/> Elevated loads	<input type="checkbox"/> Water/drowning hazard
<input type="checkbox"/> Explosion/fire	<input type="checkbox"/> Slips, trip and falls	<input type="checkbox"/> Heavy equipment
<input type="checkbox"/> Radiation	<input type="checkbox"/> Manual lifting	<input type="checkbox"/> Aerial lifts/platforms
<input type="checkbox"/> Confined space entry	<input type="checkbox"/> Welding/cutting	<input type="checkbox"/> Demolition

Other Potential Hazards (Describe):

Hazard Control Measures (Check all that apply):

<p>PPE</p> <ul style="list-style-type: none"> <input type="checkbox"/> Thermal/lined <input type="checkbox"/> Eye <input type="checkbox"/> Dermal/hand <input type="checkbox"/> Hearing <input type="checkbox"/> Respiratory <input type="checkbox"/> Reflective vests <input type="checkbox"/> Flotation device 	<p>Protective Systems</p> <ul style="list-style-type: none"> <input type="checkbox"/> Sloping <input type="checkbox"/> Shoring <input type="checkbox"/> Trench box <input type="checkbox"/> Barricades <input type="checkbox"/> Competent person <input type="checkbox"/> Locate buried utilities <input type="checkbox"/> Daily inspections 	<p>Fire Protection</p> <ul style="list-style-type: none"> <input type="checkbox"/> Fire extinguishers <input type="checkbox"/> Fire watch <input type="checkbox"/> Non-spark tools <input type="checkbox"/> Grounding/bonding <input type="checkbox"/> Intrinsically safe equipment 	<p>Electrical</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lockout/tagout <input type="checkbox"/> Grounded <input type="checkbox"/> Panels covered <input type="checkbox"/> GFCI/extension cords <input type="checkbox"/> Power tools/cord inspected
<p>Fall Protection</p> <ul style="list-style-type: none"> <input type="checkbox"/> Harness/lanyards <input type="checkbox"/> Adequate anchorage <input type="checkbox"/> Guardrail system <input type="checkbox"/> Covered opening <input type="checkbox"/> Fixed barricades <input type="checkbox"/> Warning system 	<p>Air Monitoring</p> <ul style="list-style-type: none"> <input type="checkbox"/> PID/FID <input type="checkbox"/> Detector tubes <input type="checkbox"/> Radiation <input type="checkbox"/> Personnel sampling <input type="checkbox"/> LEL/O2 <input type="checkbox"/> Other 	<p>Proper Equipment</p> <ul style="list-style-type: none"> <input type="checkbox"/> Aerial lift/ladders/scaffolds <input type="checkbox"/> Forklift/ Heavy equipment <input type="checkbox"/> Backup alarms <input type="checkbox"/> Hand/power tools <input type="checkbox"/> Crane w/current inspection <input type="checkbox"/> Proper rigging <input type="checkbox"/> Operator qualified 	<p>Welding & Cutting</p> <ul style="list-style-type: none"> <input type="checkbox"/> Cylinders secured/capped <input type="checkbox"/> Cylinders separated/upright <input type="checkbox"/> Flash-back arrestors <input type="checkbox"/> No cylinders in CSE <input type="checkbox"/> Flame retardant clothing <input type="checkbox"/> Appropriate goggles
<p>Confined Space Entry</p> <ul style="list-style-type: none"> <input type="checkbox"/> Isolation <input type="checkbox"/> Air monitoring <input type="checkbox"/> Trained personnel <input type="checkbox"/> Permit completed <input type="checkbox"/> Rescue 	<p>Medical/ER</p> <ul style="list-style-type: none"> <input type="checkbox"/> First-aid kit <input type="checkbox"/> Eye wash <input type="checkbox"/> FA-CPR trained personnel <input type="checkbox"/> Route to hospital 	<p>Heat/Cold Stress</p> <ul style="list-style-type: none"> <input type="checkbox"/> Work/rest regime <input type="checkbox"/> Rest area <input type="checkbox"/> Liquids available <input type="checkbox"/> Monitoring <input type="checkbox"/> Training 	<p>Vehicle/Traffic</p> <ul style="list-style-type: none"> <input type="checkbox"/> Traffic control <input type="checkbox"/> Barricades <input type="checkbox"/> Flags <input type="checkbox"/> Signs
<p>Permits</p> <ul style="list-style-type: none"> <input type="checkbox"/> Hot work <input type="checkbox"/> Confined space <input type="checkbox"/> Lockout/tagout <input type="checkbox"/> Excavation <input type="checkbox"/> Demolition <input type="checkbox"/> Energized work 	<p>Demolition</p> <ul style="list-style-type: none"> <input type="checkbox"/> Pre-demolition survey <input type="checkbox"/> Structure condition <input type="checkbox"/> Isolate area/utilities <input type="checkbox"/> Competent person <input type="checkbox"/> Hazmat present 	<p>Inspections:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Ladders/aerial lifts <input type="checkbox"/> Lanyards/harness <input type="checkbox"/> Scaffolds <input type="checkbox"/> Heavy equipment <input type="checkbox"/> Cranes and rigging 	<p>Training:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Hazwaste <input type="checkbox"/> Construction <input type="checkbox"/> Competent person <input type="checkbox"/> Task-specific (THA) <input type="checkbox"/> Hazcom

FieldNotes: _____

Supervisor signature: _____

Date: _____

Project: _____	Supervisor: _____	Date: _____
Task/Operation Observed: _____ _____ _____	Job Title of Worker Observed: _____ _____	
Background Information/comments: _____ _____ _____	Task Hazard Analysis completed for task (Y/N): _____	
Positive Observations/Safe Work Procedures 1. _____ 2. _____ 3. _____ 4. _____		
Questionable Activity/Unsafe Condition Observed 1. _____ 2. _____ 3. _____		
Observed Worker's Comment(s) 1. _____ 2. _____ 3. _____ 4. _____		
Supervisor's Corrective Actions Taken: 1. _____ 2. _____ 3. _____ 4. _____		

CH2MHILL

Loss Investigation Report Form

Employer Information

Company Name: _____

Project Name: _____ Project Number: _____

Project Location: _____

CHIL Project? Yes No

Task Location: _____

Job Assignment: _____ Business Group: _____

Preparer's Name: _____ Preparer's Employee Number: _____

Near Loss Incident Specific Information

Date of Incident: _____ Time of Incident: _____ a.m./p.m.

Location of incident:

Company premises

Field

In Transit

Other: _____

Address where the incident occurred: _____

Equipment Malfunction : Yes No

Activity was a Routine Task: Yes No

Describe any property damage: _____

Specific activity the employee was engaged in when the incident occurred: _____

All equipment, materials, or chemicals the employee was using when the incident occurred: _____

Describe the specific incident and how it occurred:

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)

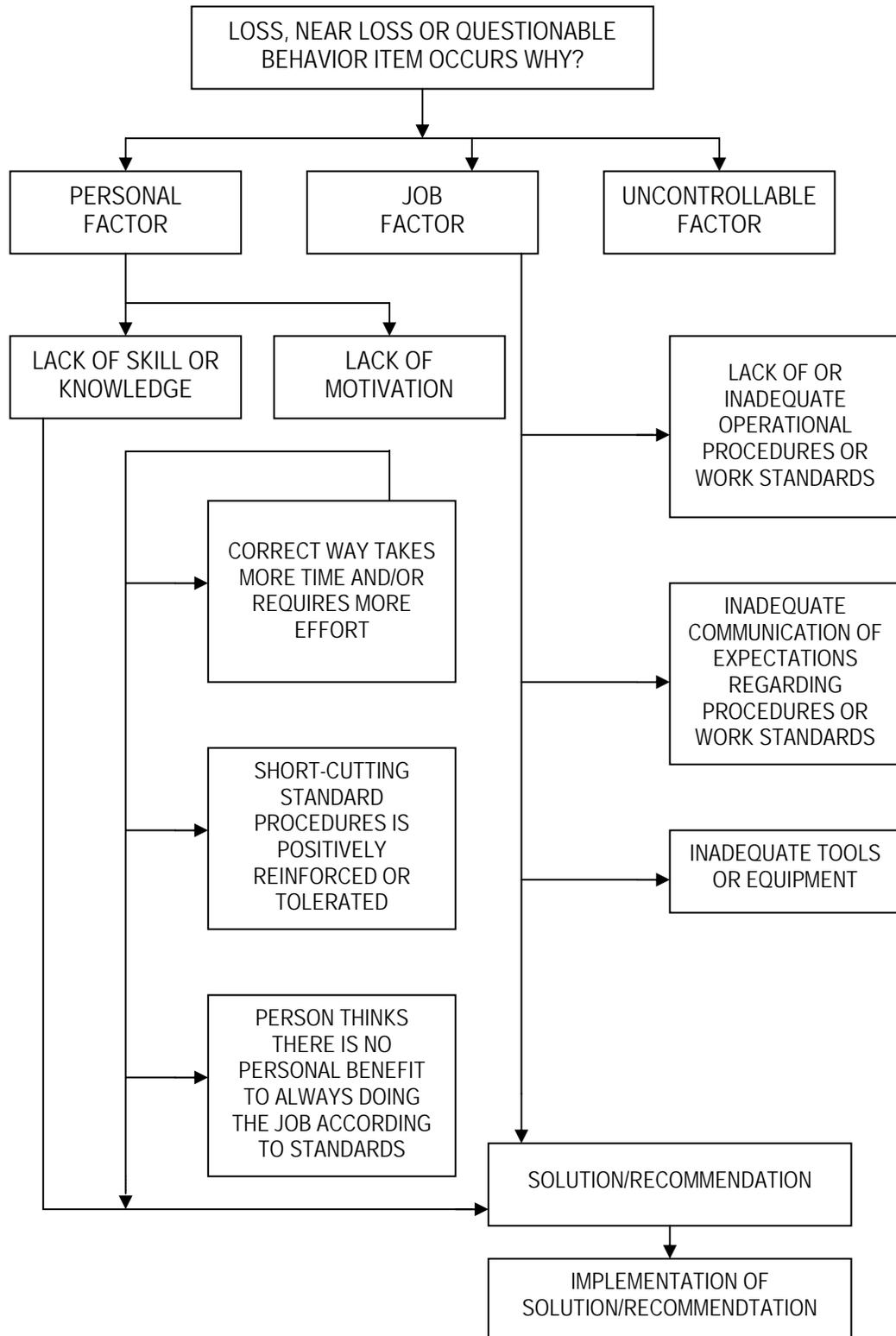
Name: _____
Employee Number (for CH2M HILL employees): _____
Address: _____
City: _____
Zip Code : _____
Phone: _____

Witness Information (Second Witness)

Name: _____
Employee Number (for CH2M HILL employees): _____
Address: _____
City: _____
Zip Code: _____
Phone : _____
Additional information or comments: _____

COMPLETE ROOT CAUSE ANALYSIS FOR

Root Cause Analysis Flow Chart





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.

- Lack of skill or knowledge
- Lack of or inadequate operational procedures or work standards
- Inadequate communication of expectations regarding procedures or work standards
- Inadequate tools or equipment
- Correct way takes more time and/or requires more effort
- Short-cutting standard procedures is positively reinforced or tolerated
- Person thinks there is no personal benefit to always doing the job according to standards

RCC #	Root Cause(s)	Corrective Actions	RC ¹	CF ²	Due Date	Date Completed	Date Verified

¹ RC = Root Cause; ² 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

Determination of Root Cause(s)

For minor losses or near losses the information may be gathered by the supervisor or other personnel immediately following the 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

- Lack of skill or knowledge
- Correct way takes more time and/or requires more effort
- Short-cutting standard procedures is positively reinforced or tolerated
- Person thinks that there is no personal benefit to always doing the job according to standards

Job Factors

- Lack of or inadequate operational procedures or work standards.
- Inadequate communication of expectations regarding procedures or standards
- Inadequate tools or equipment

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.

Incident Report Form

Fax completed form to:

425.462.5957

CH2M HILL Seattle Office

Attention: Corporate HS&E Department

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 (CH2M HILL Office: _____)
- 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 a 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): _____

Injured Employee Data (Complete for Injury/Illness incidents only)

If CH2M HILL employee injured

Employee Name: _____ Employee Number: _____

If CH2M HILL Subcontractor employee injured

Employee Name: _____ Company: _____

Injury Type

- | | | |
|--|--|---|
| <input type="checkbox"/> Allergic Reaction | <input type="checkbox"/> Electric Shock | <input type="checkbox"/> Multiple (Specify) _____ |
| <input type="checkbox"/> Amputation | <input type="checkbox"/> Foreign Body in eye | <input type="checkbox"/> Muscle Spasms |
| <input type="checkbox"/> Asphyxia | <input type="checkbox"/> Fracture | <input type="checkbox"/> Other (Specify) _____ |
| <input type="checkbox"/> Bruise/Contusion/Abrasion | <input type="checkbox"/> Freezing/Frost Bite | <input type="checkbox"/> Poisoning (Systemic) |
| <input type="checkbox"/> Burn (Chemical) | <input type="checkbox"/> Headache | <input type="checkbox"/> Puncture |
| <input type="checkbox"/> Burn/Scald (Heat) | <input type="checkbox"/> Hearing Loss | <input type="checkbox"/> Radiation Effects |
| <input type="checkbox"/> Cancer | <input type="checkbox"/> Heat Exhaustion | <input type="checkbox"/> Strain/Sprain |
| <input type="checkbox"/> Carpal Tunnel | <input type="checkbox"/> Hernia | <input type="checkbox"/> Tendonitis |
| <input type="checkbox"/> Concussion | <input type="checkbox"/> Infection | <input type="checkbox"/> Wrist Pain |
| <input type="checkbox"/> Cut/Laceration | <input type="checkbox"/> Irritation to eye | |
| <input type="checkbox"/> Dermatitis | <input type="checkbox"/> Ligament Damage | |
| <input type="checkbox"/> Dislocation | | |

Part of Body Injured

- | | | |
|--|---|--|
| <input type="checkbox"/> Abdomen | <input type="checkbox"/> Hand(s) | <input type="checkbox"/> Neck |
| <input type="checkbox"/> Ankle(s) | <input type="checkbox"/> Head | <input type="checkbox"/> Nervous System |
| <input type="checkbox"/> Arms (Multiple) | <input type="checkbox"/> Hip(s) | <input type="checkbox"/> Nose |
| <input type="checkbox"/> Back | <input type="checkbox"/> Kidney | <input type="checkbox"/> Other (Specify) _____ |
| <input type="checkbox"/> Blood | <input type="checkbox"/> Knee(s) | <input type="checkbox"/> Reproductive System |
| <input type="checkbox"/> Body System | <input type="checkbox"/> Leg(s) | <input type="checkbox"/> Shoulder(s) |
| <input type="checkbox"/> Buttocks | <input type="checkbox"/> Liver | <input type="checkbox"/> Throat |
| <input type="checkbox"/> Chest/Ribs | <input type="checkbox"/> Lower (arms) | <input type="checkbox"/> Toe(s) |
| <input type="checkbox"/> Ear(s) | <input type="checkbox"/> Lower (legs) | <input type="checkbox"/> Upper Arm(s) |
| <input type="checkbox"/> Elbow(s) | <input type="checkbox"/> Lung | <input type="checkbox"/> Upper Leg(s) |
| <input type="checkbox"/> Eye(s) | <input type="checkbox"/> Mind | <input type="checkbox"/> Wrist(s) |
| <input type="checkbox"/> Face | | |
| <input type="checkbox"/> Finger(s) | <input type="checkbox"/> Multiple (Specify) _____ | |
| <input type="checkbox"/> Foot/Feet | | |

Nature of Injury

- | | | |
|--|---|---|
| <input type="checkbox"/> Absorption | <input type="checkbox"/> Inhalation | <input type="checkbox"/> Overexertion |
| <input type="checkbox"/> Bite/Sting/Scratch | <input type="checkbox"/> Lifting | <input type="checkbox"/> Repeated Motion/Pressure |
| <input type="checkbox"/> Cardio-Vascular/Respiratory | <input type="checkbox"/> Mental Stress | <input type="checkbox"/> Rubbed/Abraded |
| System Failure | <input type="checkbox"/> Motor Vehicle Accident | <input type="checkbox"/> Shock |
| <input type="checkbox"/> Caught In or Between | <input type="checkbox"/> Multiple (Specify) _____ | <input type="checkbox"/> Struck Against |
| <input type="checkbox"/> Fall (From Elevation) | <input type="checkbox"/> Other (Specify) _____ | <input type="checkbox"/> Struck By |
| <input type="checkbox"/> Fall (Same Level) | | <input type="checkbox"/> Work Place Violence |
| <input type="checkbox"/> Ingestion | | |

• Initial Diagnosis/Treatment Date: _____

Type of Treatment

- | | |
|---|--|
| <input type="checkbox"/> Admission to hospital/medical facility | <input type="checkbox"/> None |
| <input type="checkbox"/> Application of bandages | <input type="checkbox"/> Observation |
| <input type="checkbox"/> Cold/Heat Compression/Multiple Treatment | <input type="checkbox"/> Other (Specify) _____ |
| <input type="checkbox"/> Cold/Heat Compression/One Treatment | |
| <input type="checkbox"/> First Degree Burn Treatment | <input type="checkbox"/> Prescription- Multiple dose |
| <input type="checkbox"/> Heat Therapy/Multiple treatment | <input type="checkbox"/> Prescription- Single dose |
| <input type="checkbox"/> Multiple (Specify) _____ | <input type="checkbox"/> Removal of foreign bodies |
| | <input type="checkbox"/> Skin Removal |
| <input type="checkbox"/> Heat Therapy/One Treatment | <input type="checkbox"/> Soaking therapy- Multiple Treatment |
| <input type="checkbox"/> Non-Prescriptive medicine | <input type="checkbox"/> Soaking Therapy- One Treatment |

- Stitches/Sutures
- Tetanus
- Treatment for infection
- Treatment of 2nd /3rd 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: _____

Physician Information

Name: _____
 Address: _____
 City: _____
 Zip Code: _____
 Phone: _____

Hospital Information

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)

CH2M HILL Personnel Notified: _____
 Client Notified: _____

Witnesses (Complete for all incident types)

Witness Information (First Witness)

Name: _____
 Employee Number (CH2M HILL): _____
 Address: _____
 City: _____
 Zip Code: _____
 Phone: _____

Witness Information (Second Witness)

Name: _____
 Employee Number (CH2M HILL): _____
 Address: _____
 City: _____
 Zip Code: _____
 Phone : _____

Additional Comments: _____

NEAR LOSS INVESTIGATION FORM

Employer Information

Company Name: _____

Project Name: _____ Project Number: _____

Project Location: _____

CHIL Project? Yes No

Task Location: _____

Job Assignment: _____ Business Group: _____

Preparer's Name: _____ Preparer's Employee Number: _____

Near Loss Incident Specific Information

Date of Incident: _____ Time of Incident: _____ a.m./p.m.

Location of incident:

Company premises Field In Transit Other: _____

Address where the incident occurred: _____

Equipment Malfunction : Yes No

Activity was a Routine Task: Yes No

Describe any property damage: _____

Specific activity the employee was engaged in when the incident occurred:

All equipment, materials, or chemicals the employee was using when the incident occurred:

Describe the specific incident and how it occurred:

Describe how this incident may have been prevented:

Contributing Factors (Describe in detail why incident occurred):

Date employer notified of incident: _____ To whom reported: _____

NEAR LOSS INVESTIGATION FORM

Witness Information (First Witness)

Name: _____

Employee Number (for CH2M HILL employees): _____

Address: _____

City: _____

Zip Code : _____

Phone: _____

Witness Information (Second Witness)

Name: _____

Employee Number (for CH2M HILL employees): _____

Address: _____

City: _____

Zip Code: _____

Phone : _____

Additional information or

comments: _____

CH2M HILL HEALTH AND SAFETY PLAN

Attachment 7

Applicable Material Safety Data Sheets

CH2M HILL HEALTH AND SAFETY PLAN
Attachment 8

Subcontractor H&S Plans/Procedures

Appendix C

Quality Control Attachments

- Transportation and Disposal Log
- Submittal Register
- Testing Plan and Log
- Summary of Field Tests Log
- Quality Control Manager Appointing Letter
- Alternate Quality Control Manager Appointing Letter
- Contractor Daily Production Report
- Contractor Daily Quality Control Report
- Preparatory Phase Report



CH2M HILL
115 Perimeter Center Place, N.E.
Suite 700
Atlanta, GA
30346-1278
Tel 770.604.9095
Fax 770.604.9282

November 22, 2005

Mr. Greg Ramey
CH2M HILL Constructors, Inc.
115 Perimeter Center Place, N.E.
Suite 115
Atlanta, Georgia 30346

RE: Contract No. N62467-98-D-0995
Contract Task Order No. 0057
Naval Air Station (NAS) Cecil Field – Jacksonville, Florida
Project Quality Control Manager Letter of Appointment

Dear Mr. Ramey:

Herein describes the responsibilities and authority delegated to you in your capacity as the Project QC Manager at the NAS Cecil Field site, Contract Task Order (CTO) 0057 under RAC Contract No. N62467-98-D-0995.

In this position, you assist and represent the Program QC Manager in continued implementation and enforcement of the Project QC Plans. Your primary role is to ensure all requirements of the contract are met. Consistent with this responsibility, you will: (i) implement the QC program as described in the Navy RAC contract; (ii) manage the site-specific QC requirements in accordance with the Project QC Plans; (iii) attend the coordination and mutual understanding meeting; (iv) conduct QC meetings; (v) oversee implementation of the three phases of control; (vi) perform submittal review and approval; (vii) ensure testing is performed; (viii) prepare QC certifications and documentation required in the Navy RAC Contract; and, (ix) furnish a Completion Certificate to the Contracting Officer or designated representative, upon completion of work under a contract task order, attesting that "the work has been completed, inspected, and tested, and is in compliance with the contract."

Your responsibilities further include identifying and reporting quality problems, rejecting nonconforming materials, initiating corrective actions, and recommending solutions for nonconforming activities.

You have the authority to control or stop further processing, delivery, or installation activities until satisfactory disposition and implementation of corrective actions are achieved. You have the authority to direct the correction of non-conforming work. All work requiring corrective action will be documented on daily reports, and, in the event non-conforming work is not immediately corrected you are required to submit a non-conformance report to the PM and

copy the Program QC Manager. A status log will be kept of all non-conforming work. You shall immediately notify the Program QC Manager in the event of any stop work order.

It is imperative that you comply with all terms of the basic contract. In particular, Section C, Paragraph 6.5.2, which states:

"No work or testing may be performed unless the QC Program Manager or Project QC Manager is on the work site."

In the event that you are not able to be at the work site when work or testing is to be performed, it is your responsibility to inform the Program QC Manager and Project Manager, in advance, so that other arrangements can be made.

Further, if you are requested to perform the duties of the Site Supervisor, it is your responsibility to inform the Program QC Manager so that approval can be obtained in advance from the Contracting Officer or designated representative, in accordance with Section C Paragraph.6.2.1of the contract.

You are a key member of the Project Manager's team. You ensure that work meets the specific requirements and intent of the work plan, the Navy's scope of work and the basic contract. Should you have any questions regarding this role, you should immediately contact the Program QC Manager, Theresa Rojas. Your day-to-day activities on the site should be coordinated with all site personnel and the Project Manager. In event of any deficient items, the Superintendent and Project Manager should be advised immediately so they have opportunity to remedy the situation.

Sincerely,

CH2M HILL Constructors, Inc.



Scott Smith
Program Manager

cc: Mike Halil/JAX
Theresa Rojas/ATL
Project File No. 263231



CH2M HILL
115 Perimeter Center Place, N.E.
Suite 700
Atlanta, GA
30346-1278
Tel 770.604.9095
Fax 770.604.9282

November 22, 2005

Mr. Jeff Marks
CH2M HILL Constructors, Inc.
9428 Baymeadows Road, Suite 200
Jacksonville, Florida 32256

RE: Contract No. N62467-98-D-0995
Contract Task Order No. 0057
Naval Air Station (NAS) Cecil Field – Jacksonville, Florida
Alternate Project Quality Control Manager Letter of Appointment

Dear Mr. Marks:

Herein describes the responsibilities and authority delegated to you in your capacity as the alternate Project QC Manager on the NAS Cecil Field, Contract Task Order (CTO) 0057 under RAC Contract No. N62467-98-D-0995.

In this position, you assist and represent the Project QC Manager in the event that he is not on the project site and the Program QC Manager in continued implementation and enforcement of the Project QC Plans. Your primary role is to ensure all requirements of the contract are met. Consistent with this responsibility, you will: (i) implement the QC program as described in the Navy RAC contract; (ii) manage the site-specific QC requirements in accordance with the Project QC Plans; (iii) attend the coordination and mutual understanding meeting; (iv) conduct QC meetings; (v) oversee implementation of the three phases of control; (vi) perform submittal review and approval; (vii) ensure testing is performed; , (viii) prepare QC certifications and documentation required in the Navy RAC Contract; and, (ix) furnish a Completion Certificate to the Contracting Officer or designated representative, upon completion of work under a contract task order , attesting that "the work has been completed, inspected, and tested, and is in compliance with the contract."

Your responsibilities further include identifying and reporting quality problems, rejecting nonconforming materials, initiating corrective actions, and recommending solutions for nonconforming activities.

You have the authority to control or stop further processing, delivery, or installation activities until satisfactory disposition and implementation of corrective actions are achieved. You have the authority to direct the correction of non-conforming work. All work requiring corrective action will be documented on daily reports, and, in the event non-conforming work is not immediately corrected you are required to submit a non-conformance report to the PM and

copy the Program QC Manager. A status log will be kept of all non-conforming work. You shall immediately notify the Program QC Manager in the event of any stop work order.

It is imperative that you comply with all terms of the basic contract. In particular, Section C, Paragraph 6.5.2, which states:

"No work or testing may be performed unless the QC Program Manager or Project QC Manager is on the work site."

In the event that you are not able to be at the work site when work or testing is to be performed, it is your responsibility to inform the Program QC Manager and Project Manager, in advance, so that other arrangements can be made.

Further, if you are requested to perform the duties of the Site Supervisor, it is your responsibility to inform the Program QC Manager so that approval can be obtained in advance from the Contracting Officer or designated representative, in accordance with Section C Paragraph.6.2.1of the contract.

You are a key member of the Project Manager's team and ensure that work meets the specific requirements and intent of the work plan, the Navy's scope of work and the basic contract. Should you have any questions regarding this role, you should immediately contact the Program QC Manager, Theresa Rojas. Your day-to-day activities on the site should be coordinated with all site personnel and the Project Manager. In event of any deficient items, the Superintendent and Project Manager should be advised immediately so they have opportunity to remedy the situation.

You may be assigned other responsibilities concurrent with this assignment. Regardless of other responsibilities assigned, you shall take your QC and safety responsibilities as primary. Any other assigned responsibilities shall be secondary to your QC and safety responsibilities.

Sincerely,

CH2M HILL Constructors, Inc.



Scott Smith
Program Manager

cc: Mike Halil/JAX
Theresa Rojas/ATL
Project File No. 163231

CH2M HILL SOUTH DIV RAC N62467-98-D-0995	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					
	Was A Job Safety Meeting Held This Date? <input type="checkbox"/> Yes <input type="checkbox"/> No	TOTAL WORK HOURS ON JOB SITE THIS DATE (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	JA JONES 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			
	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	Total On-Site Hours This Date			
		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			
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 <input type="checkbox"/>					
_____ SUPERINTENDENT'S SIGNATURE				_____ DATE	

CH2M HILL SOUTH DIV RAC N62467-98-D-0995	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?	<input type="checkbox"/> YES <input type="checkbox"/> NO	IF YES, ATTACH SAFETY MEETING MINUTES		
WAS CRANE USED ON THE SITE THIS DAY?	<input type="checkbox"/> YES <input type="checkbox"/> 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"/>
PREPARATORY	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"/>			
	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"/>			
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

CH2M HILL SOUTH DIV RAC N62467-98-D-0995	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:					
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"/>				
OFF-SITE SURVEILLANCE ACTIVITIES, INCLUDING ACTIONS TAKEN:							
ACCUMULATION/STOCKPILE AREA INSPECTION							
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:							
TRANSPORTATION AND DISPOSAL ACTIVITIES/SUMMARY/QUANTITIES:							
GENERAL COMMENTS (rework, directives, etc.):							
LIST OF ATTACHMENTS (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.):							
<p><i>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.</i></p>							
_____						DATE	
PROJECT QC MANAGER'S SIGNATURE							
<p><i>On behalf of the contractor, I attest that the work for which payment is requested, including stored material, is in compliance with contract requirements.</i></p>							
_____						DATE	
PROJECT QC MANAGER'S SIGNATURE							

CH2M HILL SOUTH DIV RAC N62467-98-D-0995	PREPARATORY PHASE REPORT	REPORT NO:	REPORT DATE: REVISION NO: REVISION DATE:	CTO NO:
PROJECT NO:	DEFINABLE FEATURE OF WORK:	SITE/ACTIVITY:		
PERSONNEL PRESENT	GOVERNMENT REP NOTIFIED _____ HOURS IN ADVANCE: YES <input type="checkbox"/> NO <input type="checkbox"/>			
	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.			
PRELIMINARY WORK & PERMITS	ENSURE PRELIMINARY WORK IS CORRECT AND PERMITS ARE ON FILE.			
	IF NO, WHAT ACTION IS TAKEN?			

CH2M HILL SOUTH DIV RAC N62467-98-D-0995	PREPARATORY PHASE REPORT	REPORT NO:	REPORT DATE: REVISION NO: REVISION DATE:	CTO NO:
PROJECT NO:	DEFINABLE FEATURE OF WORK:	SITE/ACTIVITY:		
TESTING	IDENTIFY TEST TO BE PERFORMED, FREQUENCY, AND BY WHOM.			
	TEST	FREQUENCY	PERFORMER	
	WHEN REQUIRED?			
	WHERE REQUIRED?			
	REVIEW TESTING PLAN.			
	HAVE TEST FACILITIES BEEN APPROVED?			
	TEST FACILITY	APPROVED?		
	YES <input type="checkbox"/> NO <input type="checkbox"/>			
	YES <input type="checkbox"/> NO <input type="checkbox"/>			
SAFETY	ACTIVITY HAZARD ANALYSIS APPROVED? YES <input type="checkbox"/> NO <input type="checkbox"/>			
	REVIEW APPLICABLE PORTION OF EM 385-1-1.			
MEETING COMMENTS	NAVY/ROICC COMMENTS DURING MEETING.			
OTHER ITEMS OR REMARKS	OTHER ITEMS OR REMARKS:			
PROJECT QC MANAGER NAME		PROJECT QC MANAGER'S SIGNATURE		DATE