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WORK PLAN ADDENDUM 5 PRODUCT RECOVERY PILOT STUDY AT SITE 1586 NS
MAYPORT FL
3/1/2006
CH2M HILL

**Work Plan Addendum No. 05
Product Recovery Pilot Study at
Site 1586**

**Naval Station Mayport
Mayport, Florida**

Revision No. 00

**Contract No. N62467-01-D-0331
Contract Task Order No. 0040**

Submitted to:



**U.S. Naval Facilities
Engineering Command
Engineering Field Division South**

Prepared by:



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

March 2006

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March 2006

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U.S. Navy Responsible Authority

Date

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- C Quality Control Attachments
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 - Contractor Daily Production Report
 - Contractor Daily Quality Control Report
 - Preparatory Phase Report

Acronyms and Abbreviations

AALA	American Association for Laboratory Accreditation
AASHTO	American Association of State Highway and Transportation Officials
ACO	Administrative Contracting Officer
AFCEE	Air Force Center for Environmental Excellence
AHA	activity hazard analysis
bls	below land surface
CFR	Code of Federal Regulations
CH2M HILL	CH2M HILL Constructors, Inc.
CO	Contracting Officer
COC	Contaminants of Concern
COTR	Contracting Officer's Technical Representative
CTO	Contract Task Order
DOT	Department of Transportation
EISOPQAM	Environmental Investigative Standard Operating Procedure and Quality Assurance Manual
EPA	U.S. Environmental Protection Agency
ERG	Emergency Response Guide
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
GCTL	Groundwater Cleanup Target Level
IRCDQM	Installation Restoration Chemical Data Quality Manual
LNAPL	light non-aqueous phase liquid
min	minute
mL	milliliters
MSL	mean sea level
NAVFAC EFD	Naval Facilities Engineering Command, Engineering Field Division, Southern Division
SOUTH	
NAVSTA	Naval Station
NIST	National Institute of Standards and Technology
NTR	Navy Technical Representative
NVLAP	National Voluntary Laboratory Accreditation Program

PPE	personal protective equipment
psi	pounds per square inch
PVC	polyvinyl chloride
QA	quality assurance
QC	quality control
QCR	Quality Control Report
RCRA	Resource Conservation and Recovery Act
ROICC	Resident Officer in Charge of Construction
RPM	Remedial Project Manager
SA	Site Assessment
SAP	Sampling and Analysis Plan
SAR	Site Assessment Report
SCTL	Soil Cleanup Target Level
SOPs	Standard Operating Procedures
T&D	transportation and disposal
TAT	turnaround time
TtNUS	Tetra Tech NUS, Inc.
USACE	U.S. Army Corps of Engineers
UST	underground storage tank

1.0 Introduction

CH2M HILL Constructors, Inc. (CH2M HILL) has been contracted by the U.S. Naval Facilities Engineering Command, Engineering Field Division, Southern Division (NAVFAC EFD SOUTH), to prepare this Work Plan Addendum, under Response Action Contract No. N62467-01-D-0331, Contract Task Order (CTO) No. 0040. The purpose of this Work Plan Addendum is to outline preliminary pilot study activities to determine the technical and practical feasibility of light non-aqueous phase liquid (LNAPL) recovery options for Site 1586 located at Naval Station (NAVSTA) Mayport, Mayport, Florida.

Preliminary pilot study activities at Site 1586 will include:

- Technology/literature evaluation for feasible LNAPL recovery option selection
- Mobilization and site preparation
- Synoptic LNAPL/groundwater elevation survey
- LNAPL recovery testing
- Collection, characterization, and transportation and disposal (T&D) of contaminated materials generated or accumulated during pilot study activities
- Decontamination and demobilization
- Preparation and submittal of a Technical Memorandum documenting completion or deviation from pilot study activities described in this Work Plan Addendum

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

Section 1.0 Introduction includes the site description and history 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 NAVSTA Mayport Basewide Work Plan (CH2M HILL, 1999) 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 NAVSTA Mayport 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 NAVSTA Mayport Basewide Work Plan, which contains the Environmental Protection Plan for all work completed at NAVSTA Mayport.

Section 6.0 Quality Control Plan includes the testing requirements for activities 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 NAVSTA Mayport Basewide Work Plan, including information on the quality administrators, the project organization for the work to be completed at NAVSTA Mayport, 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 NAVSTA Mayport Basewide Work Plan addresses project-specific health and safety issues for the remedial activities to be completed at NAVSTA Mayport.

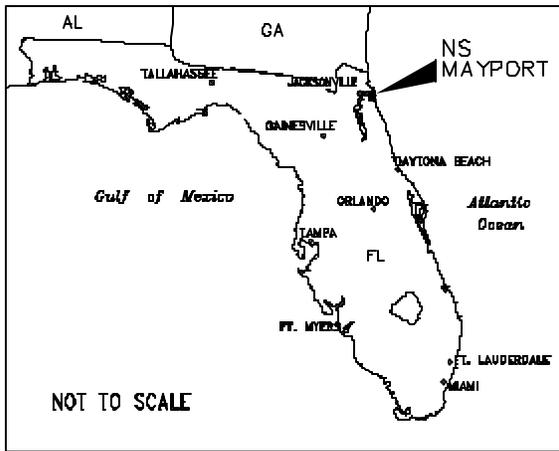
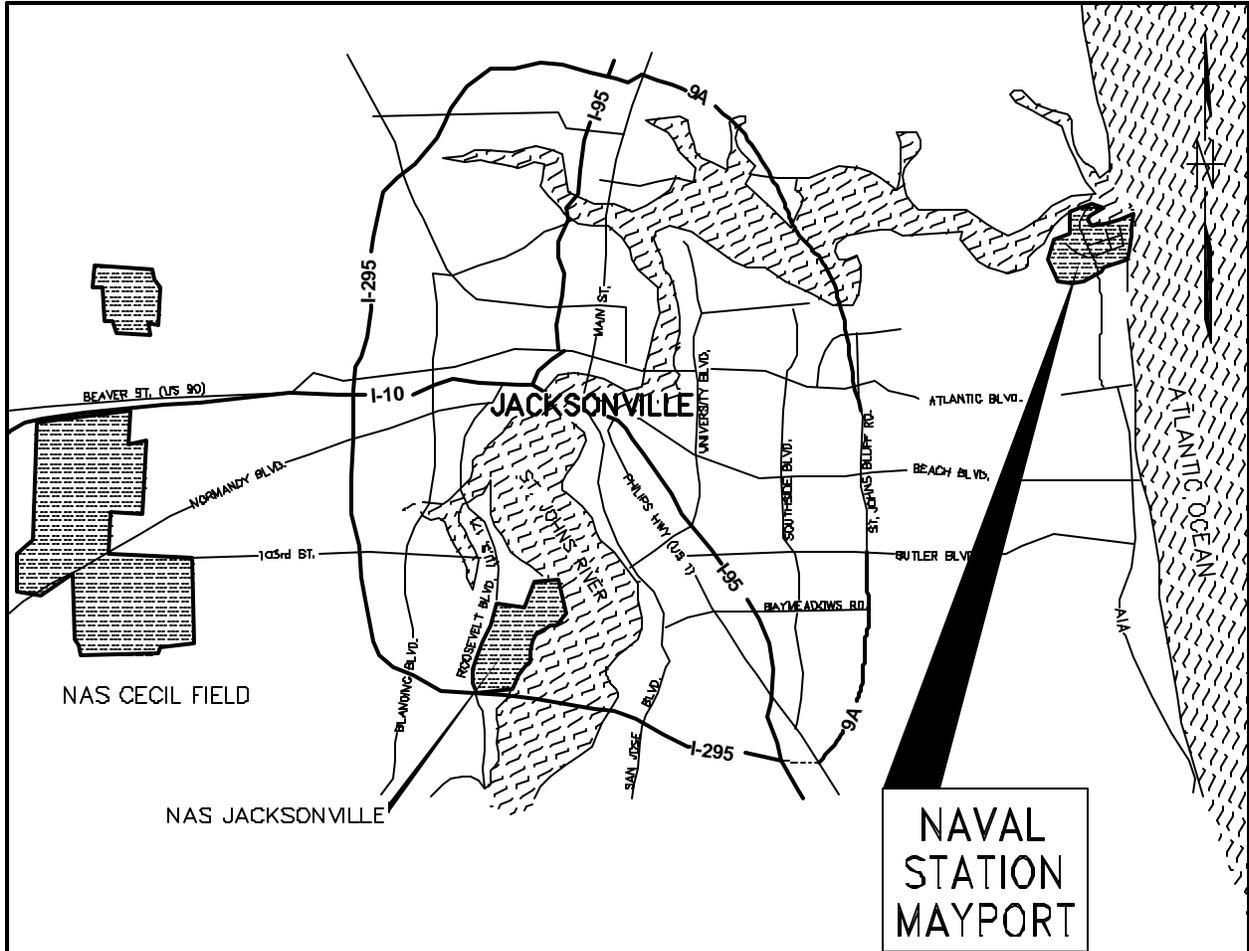
1.1 Site Description and History

1.1.1 Site Description

NAVSTA Mayport is located within the corporate limits of the city of Jacksonville, Duval County, Florida, approximately 12 miles to the northeast of downtown Jacksonville, and adjacent to the town of Mayport. A regional area map is provided as Figure 1-1. The station complex is located on the northern end of a peninsula bound by the Atlantic Ocean to the east and the St. Johns River to the north and west. NAVSTA Mayport occupies the entire northern part of the peninsula except for the town of Mayport, which is located to the west, between the station and the St. Johns River (Tetra Tech NUS, Inc. [TtNUS], 2003).

Building 1586 is located in the northeastern region of the base as indicated on the Site Location Map (Figure 1-2). The subject site is located at the end of Building 1586 on the northeastern side. The building is used as the Bachelors' Quarters (TtNUS, 2003).

A site plan showing surface features in the area of investigation is provided as Figure 1-3. Building 1586 is constructed with brick and cement block. The surface surrounding the building is grass. The area under investigation is near the eastern corner of the building where an underground storage tank (UST) containing fuel oil is located. The UST is located under a cement slab and has a flush-mount manhole covering the fill port. Underground utilities traverse the site near the UST and 12 monitoring wells were located within the area of investigation prior to initiation of the Site Assessment (SA). Two of the 12 monitoring wells, MW-12s and MW-13s, are unfinished wells (temporary wells) with unprotected polyvinyl chloride (PVC) stick risers that were previously installed by another contractor. Surrounding the UST, gravel has been used as backfill and is covered with sod. This backfilled area extends from the area of the UST approximately 40 feet along the south wall of the building. The area of gravel extends out from the dorm wall 15 to 20 feet to the sidewalk, which outlines the UST area and extends along the south side of the dormitory (TtNUS, 2003).

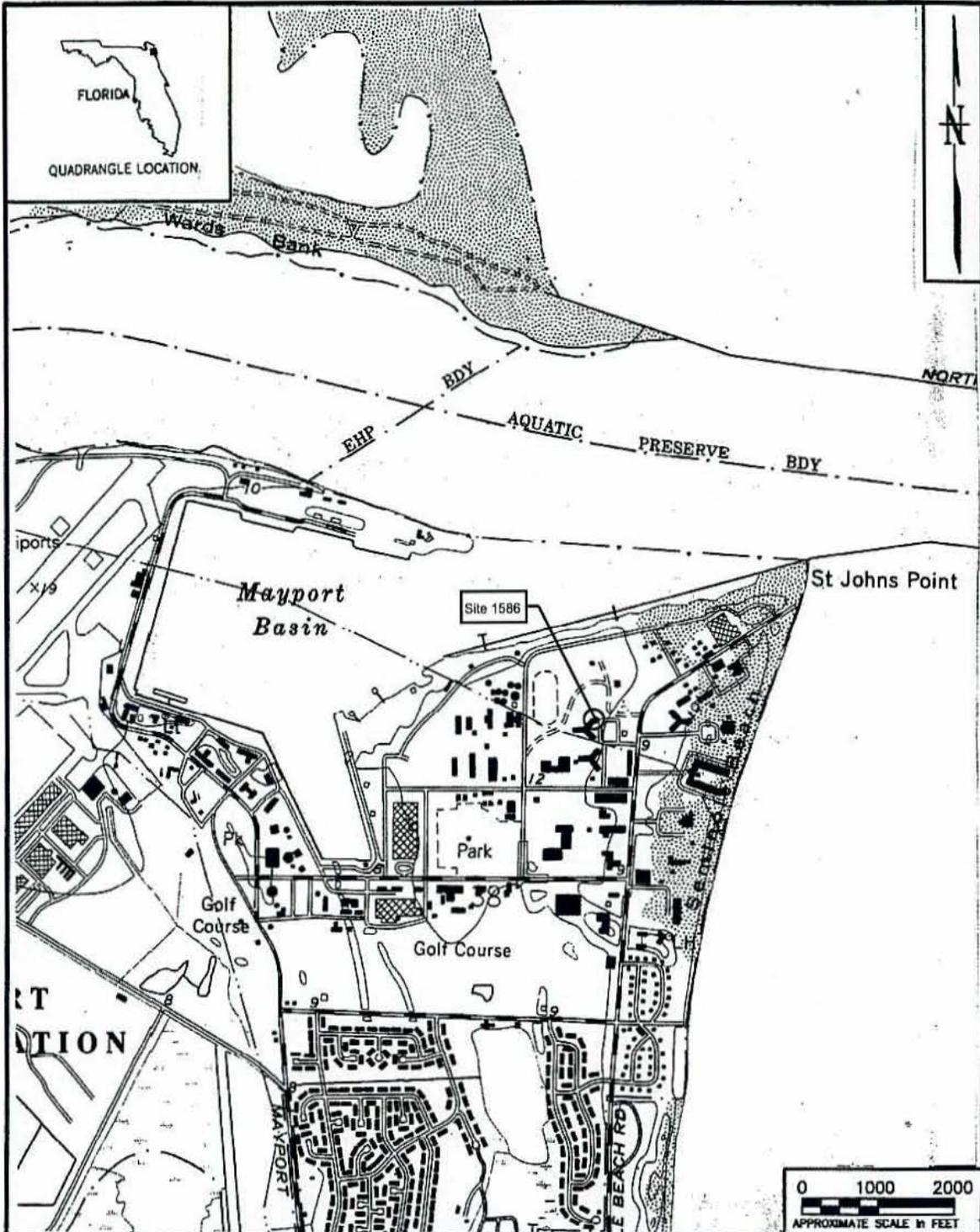


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COST/SCHED-AREA	
SCALE AS NOTED	



REGIONAL AREA MAP
SITE 1586
SITE ASSESSMENT REPORT
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO. 4258	
APPROVED BY	DATE
APPROVED BY	DATE
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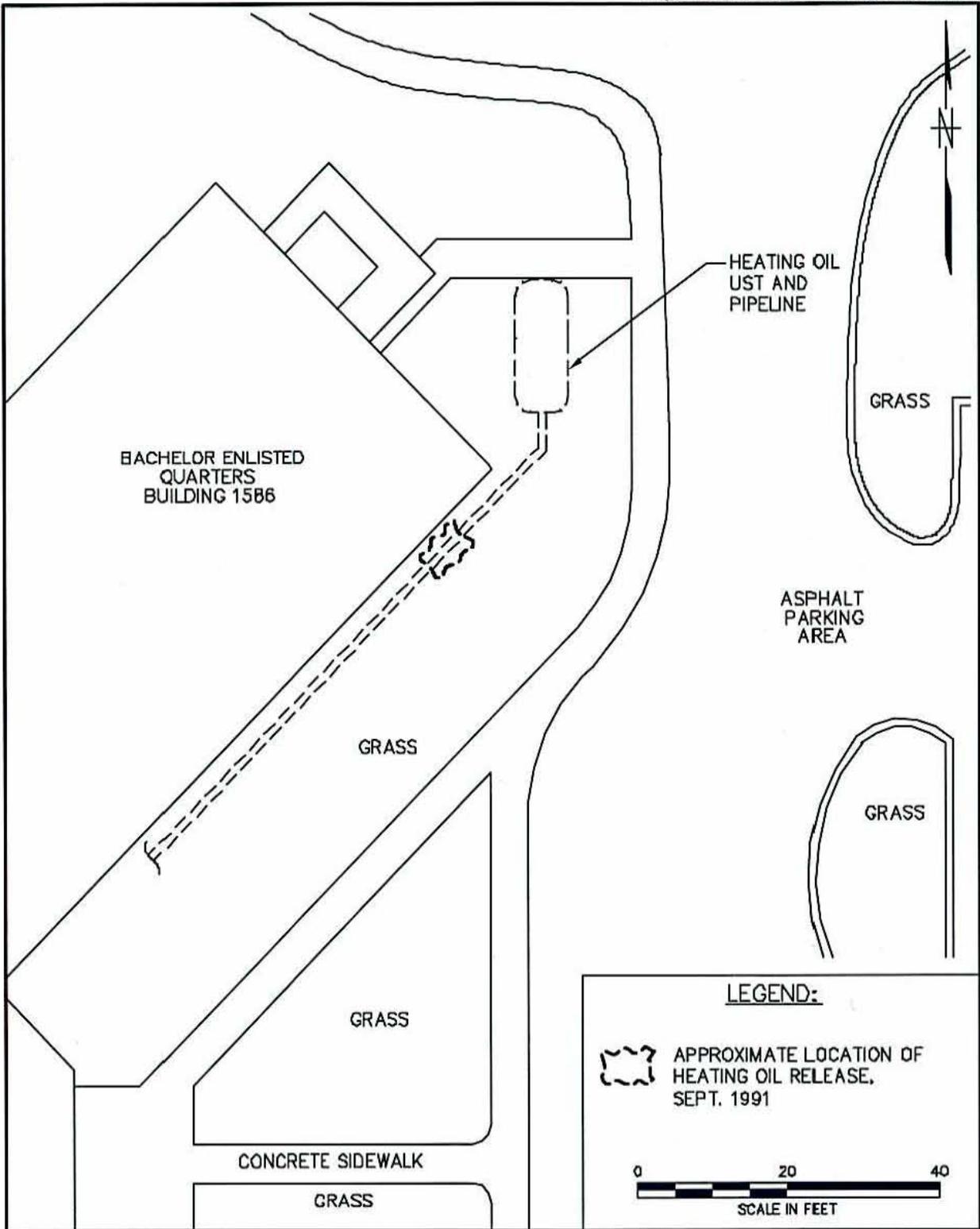
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SITE LOCATION MAP
SITE ASSESSMENT REPORT
SITE 1586
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CONTRACT NO.	4240
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FIGURE 1-2	0

Source: USGS Mayport, Florida 7.5-Minute Topographic Quadrangle, Revised 1992



BACHELOR ENLISTED
QUARTERS
BUILDING 1586

HEATING OIL
TANK AND
PIPELINE

GRASS

ASPHALT
PARKING
AREA

GRASS

GRASS

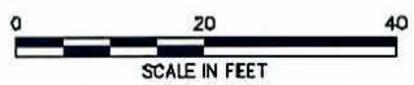
GRASS

CONCRETE SIDEWALK

GRASS

LEGEND:

 APPROXIMATE LOCATION OF
HEATING OIL RELEASE,
SEPT. 1991



DRAWN BY LLK	DATE 1/14/03	SITE PLAN SITE 1586 SITE ASSESSMENT REPORT NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NO. 4240	
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1.1.2 Site History

Site 1586 was the focus of a Site Assessment (SA) to evaluate the extent of petroleum hydrocarbons in soil and groundwater that resulted from a 1991 rupture of a fuel line. This work included the installation of monitoring wells and numerous soil borings. Results of these earlier investigations indicated that Site 1586 was a candidate for natural attenuation. Subsequent monitoring of the site conducted in 1999 and 2000 indicated that petroleum constituents were below Groundwater Cleanup Target Levels (GCTLs), therefore, the site was eligible for closure. However, on April 30, 2000, the contractor installing a new 5,000-gallon double-walled fiberglass UST in the same tank pit as the previously removed 4,000-gallon fuel oil UST, spilled 1,400 gallons of fuel oil. The release was reported to Mr. Jim Cason of the FDEP. The contractor installed free product recovery wells. However, free product extraction was not immediately initiated despite the Navy's attempts to get the contractor to accept responsibility (TtNUS, 2003).

The objective of the completed SA field investigation was to determine the extent of soil and/or groundwater impacts at the site. Data collected during the investigation were used to prepare an SA Report (SAR) as required by Florida Administrative Code (FAC) Chapter 62-770.600. The SAR provided a characterization of site conditions from which to base future courses of action. Based on results obtained during the SA at Site 1586, a current impact to the environmental media would require periodic monitoring or active remediation. The SAR included the following recommendations and conclusions for this site (TtNUS, 2003):

- Free product is present in monitoring wells MPT-BE-MW06S, MPT-1586-MW15S, MPT-1586-MW16S, and MPT-1586-MW17S located around the tank pit.
- Free product removal is currently underway via hand bailing, which is being performed by the Navy.
- "Excessively contaminated soil," as defined by FAC Chapter 62-777.200 is present at the site as determined by organic vapor analysis with flame ionization detector headspace analyses. Soil contamination is present, but appears to be mostly limited to the areas of free product and may be associated with the capillary fringe (5 feet below land surface [bls]). One soil measurement from SB-4 (3 feet bls) did report a concentration of 62 parts per million. Several contaminants of concern (COCs) were reported in this area at concentrations exceeding leachability-based Soil Cleanup Target Levels (SCTLs) in confirmatory soil samples submitted to a certified fixed-base laboratory.
- No petroleum constituents exceeded the GCTLs in fixed-based groundwater analysis from the intermediate well located near the source area or in 20- and 40-foot bls groundwater samples collected for mobile laboratory analysis.
- The vertical and horizontal extent of COCs identified in groundwater by the mobile laboratory or fixed-base laboratory appears to be limited in extent to the area surrounding the tank pit.
- Groundwater flow direction indicates that one additional downgradient well should be installed. The well will be installed and sampled for Gasoline Analytical Group/

Kerosene Analytical Group constituents. The results will be prepared in a SAR Addendum.

The SAR recommended a Remedial Action Plan be prepared to address the free product and impacted soil and groundwater at Site 1586 (TtNUS, 2003).

The Navy is removing LNAPL periodically from site monitoring wells using a peristaltic pump. Table 1-1 provides the LNAPL removal field measurements collected to date.

TABLE 1-1
LNAPL Removal Field Measurements

Monitoring Well ID:	MPT-BE-06S					
Date:	28-Aug-05	1-Oct-05	29-Oct-05	24-Nov-05	27-Dec-05	21-Jan-06
Depth to LNAPL (feet bls)	4.80	4.70	4.90	6.34	6.45	5.30
Depth to Water (feet bls)	6.30	5.70	5.70	7.28	7.45	5.92
LNAPL Thickness (feet)	1.50	1.00	0.80	0.94	1.00	0.62
LNAPL volume removed (mL)	200	500	500	350	700	500
Monitoring Well ID:	MPT-1586-16S					
Date:	28-Aug-05	1-Oct-05	29-Oct-05	24-Nov-05	27-Dec-05	21-Jan-06
Depth to LNAPL (feet bls)	4.70	4.60	3.70	5.28	4.70	5.22
Depth to Water (feet bls)	6.00	5.30	4.20	6.37	5.40	5.61
LNAPL Thickness (feet)	1.30	0.70	0.50	1.09	0.70	0.39
LNAPL volume removed (mL)	350	500	500	600	700	270
Monitoring Well ID:	MPT-1586-17S					
Date:	28-Aug-05	1-Oct-05	29-Oct-05	24-Nov-05	27-Dec-05	21-Jan-06
Depth to LNAPL (feet bls)	4.70	4.60	4.80	5.43	5.52	6.20
Depth to Water (feet bls)	5.40	5.50	5.40	6.21	6.42	7.30
LNAPL Thickness (feet)	0.70	0.90	0.60	0.78	0.90	1.10
LNAPL volume removed (mL)	200	1000	1000	500	800	800

Notes:

1. LNAPL removal field measurements obtained from TtNUS
2. milliliters = mL

1.2 Project Objectives

The objectives of activities outlined in this Work Plan Addendum are to determine the technical and practical feasibility of LNAPL recovery options for Site 1586.

Preliminary pilot study activities will include:

1. Technology/literature evaluation to select feasible LNAPL recovery options. The evaluation will include alternatives to standard LNAPL recovery systems, including oil bioremediation products (crude oil spill treatments) to assess the current state-of-the-art products in the crude oil spill response industry.

2. Synoptic LNAPL/groundwater elevation survey. These data will be used to complete LNAPL extraction tests, as well as for comparison to historical LNAPL thickness measurements to evaluate LNAPL plume stability.
3. LNAPL recovery tests at each monitoring well where LNAPL is measured to determine LNAPL recharge rates. These data will be used to assess the feasibility, level of aggressiveness, and configuration of possible LNAPL recovery systems.

Revisions to this Work Plan Addendum will be submitted to outline any future pilot study field efforts.

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

Preliminary pilot study activities at Site 1586 will include:

- Technology/literature evaluation for feasible LNAPL recovery option selection
- Mobilization and site preparation
- Synoptic LNAPL/groundwater elevation survey
- LNAPL recovery testing
- Collection, characterization, and T&D of contaminated materials generated or accumulated during pilot study activities
- Decontamination and demobilization
- Preparation and submittal of a Technical Memorandum documenting completion or deviation from pilot study activities described in this Work Plan Addendum

2.1.1 Technology/Literature Evaluation

A technology/literature evaluation will be completed to select feasible LNAPL recovery options. The evaluation is planned to include, but not be limited to, the following potential technologies:

- Manual LNAPL Recovery
- Passive LNAPL Skimmers
- Active LNAPL Recovery Systems
- Aggressive Fluid Recovery by Vacuum Truck
- Vacuum-enhanced LNAPL Skimming
- Oil Bioremediation Products (crude oil spill treatments)

The technology/literature evaluation will incorporate the determined LNAPL recharge rates with available technologies and products, types of application, practicality of using existing 2-inch diameter site wells for LNAPL recovery, aerobic/anaerobic conditions, cost, number of site used, effectiveness, etc.

The data collected during the synoptic LNAPL/groundwater elevation survey and LNAPL recovery tests will be used to assess the feasibility, level of aggressiveness, and configuration of possible LNAPL recovery systems. If practical, historical and current site data will be used to create and verify a site model to assess the recoverability of the LNAPL.

2.1.2 Mobilization and Site Preparation

This task will consist of the mobilization of personnel and equipment to the work site and the establishing temporary facilities, including portable sanitary facilities, a decontamination area, site refuge area, and equipment laydown area. Project management and scheduling activities, including contractor coordination, will be achieved from the CH2M HILL office located at former Naval Air Station Cecil Field.

Prior to the commencement of work, site controls including construction barricades and security fencing will be installed and the decontamination area and equipment laydown area will be prepared. At this time, intrusive work will not be performed; however, if required, CH2M HILL will coordinate with Sunshine State One Call of Florida, NAVSTA Mayport Facilities and Engineering Division, and the Resident Officer in Charge of Construction (ROICC) 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. 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 the ROICC and subsequently repaired by CH2M HILL via methods approved by the ROICC.

2.1.3 Synoptic LNAPL/Groundwater Elevation Survey

Prior to LNAPL recovery testing, LNAPL and groundwater elevations will be measured to determine product thickness and distribution in site monitoring wells. Elevation measurements will be collected from the wells listed in Table 2-1. Monitoring well locations are shown on Figure 2-1.

TABLE 2-1
Monitoring Wells – LNAPL/Groundwater Elevation Measurements

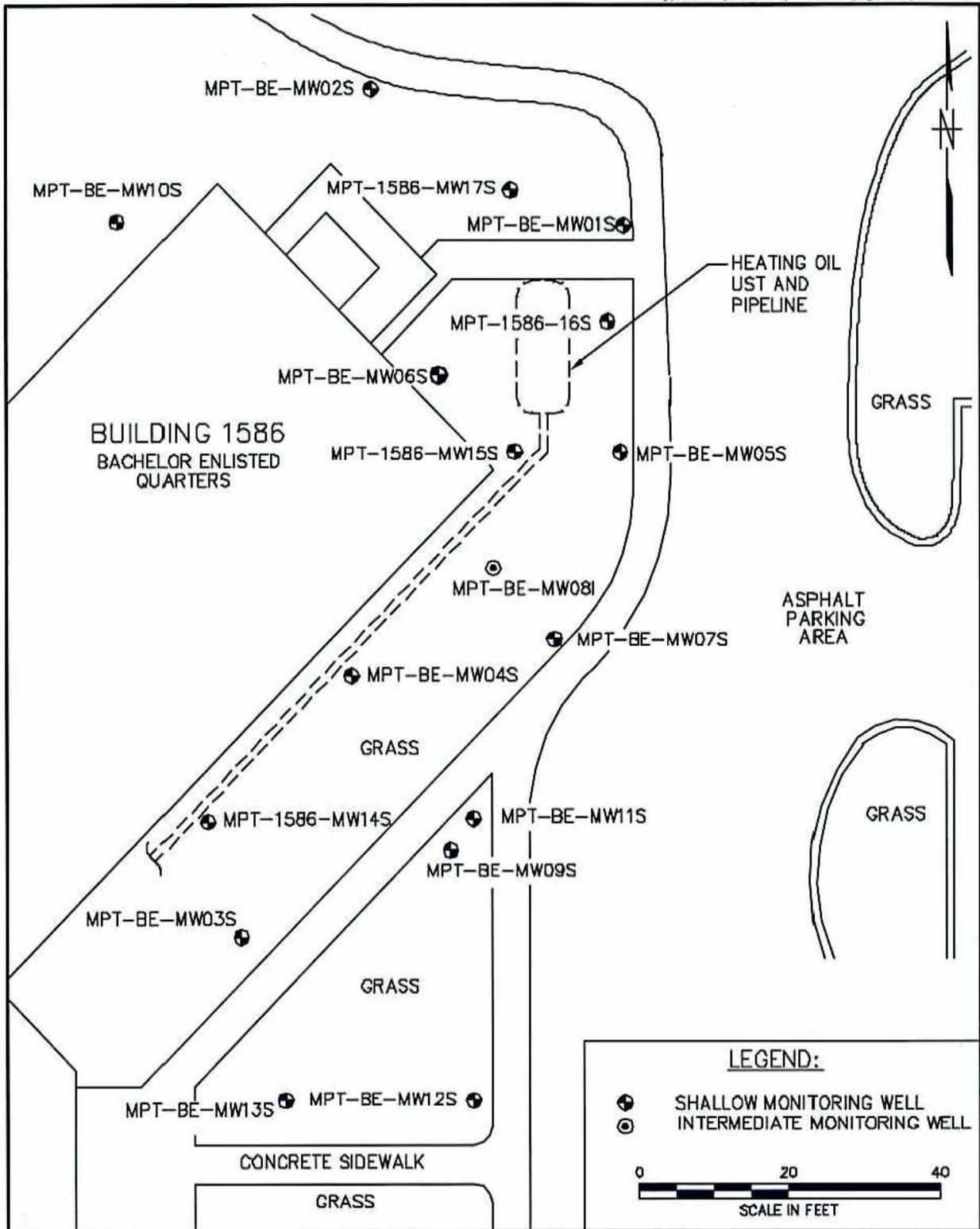
Monitoring Well ID	Top of Casing Elevation (feet MSL)	Total Well Depth (feet)	Screened Interval (feet bls)	Diameter (inches)
MPT-BE-MW01S	7.66	13.00	3 to 13*	2
MPT-BE-MW02S	7.77	13.00	3 to 13*	2
MPT-BE-MW04S	8.28	13.00	3 to 13*	2
MPT-BE-MW05S	7.55	13.00	3 to 13*	2
MPT-BE-MW06S	9.25	13.00	3 to 13*	2
MPT-BE-MW07S	7.60	13.00	3 to 13*	2
MPT-BE-MW09S	8.09	13.00	3 to 13*	2
MPT-BE-MW10S	8.55	13.00	3 to 13*	2
MPT-BE-MW11S	8.00	13.00	3 to 13*	2
MPT-1586-MW14S	9.28	13.00	3 to 13	2
MPT-1586-MW15S	8.76	13.00	3 to 13	2
MPT-1586-MW16S	8.21	13.00	3 to 13	2
MPT-1586-MW17S	8.24	13.00	3 to 13	2
MPT-BE-MW08I	8.04	30.00	25 to 30*	2

MSL = mean sea level

* = presumed screened interval

S = shallow well

I = intermediate well



LEGEND:

- ⊙ SHALLOW MONITORING WELL
- ⊕ INTERMEDIATE MONITORING WELL

0 20 40
SCALE IN FEET

DRAWN BY DM	DATE 9/23/02	MONITORING WELL LOCATIONS SITE 1586 SITE ASSESSMENT REPORT NAVAL STATION MAYPORT MAYPORT, FLORIDA	CONTRACT NO. 4240	
CHECKED BY	DATE		APPROVED BY	DATE
COST/SCHED-AREA	DATE		APPROVED BY	DATE
SCALE AS NOTED	DATE		DRAWING NO. FIGURE 2-1	REV. 0

The following procedures will be used to collect LNAPL/groundwater elevation measurements from each of the site monitoring wells.

1. Check the monitoring well for proper identification and location.
2. Inspect the well head for any signs of forced entry, which could invalidate the measurement data.
3. Using an electronic oil/water interface probe, measure and record the static LNAPL level (if present) and groundwater level from the reference point (north side of top of casing) to an accuracy of 0.01-foot. Upon removing the oil/water interface probe, decontaminate in accordance with Section 3.5 of this Work Plan Addendum.

2.1.4 LNAPL Recovery Testing

LNAPL recovery tests are anticipated to be performed on the monitoring wells listed in Table 2-2. Recovery tests will be conducted using a peristaltic-style positive displacement pump. Proposed test wells were selected based on the presence of LNAPL in these monitoring locations at the time of the SA. Results of the synoptic LNAPL/groundwater elevation survey will be used to refine test locations as necessary. The monitoring well locations and the LNAPL thickness determined at the time of the SA are shown on Figure 2-2.

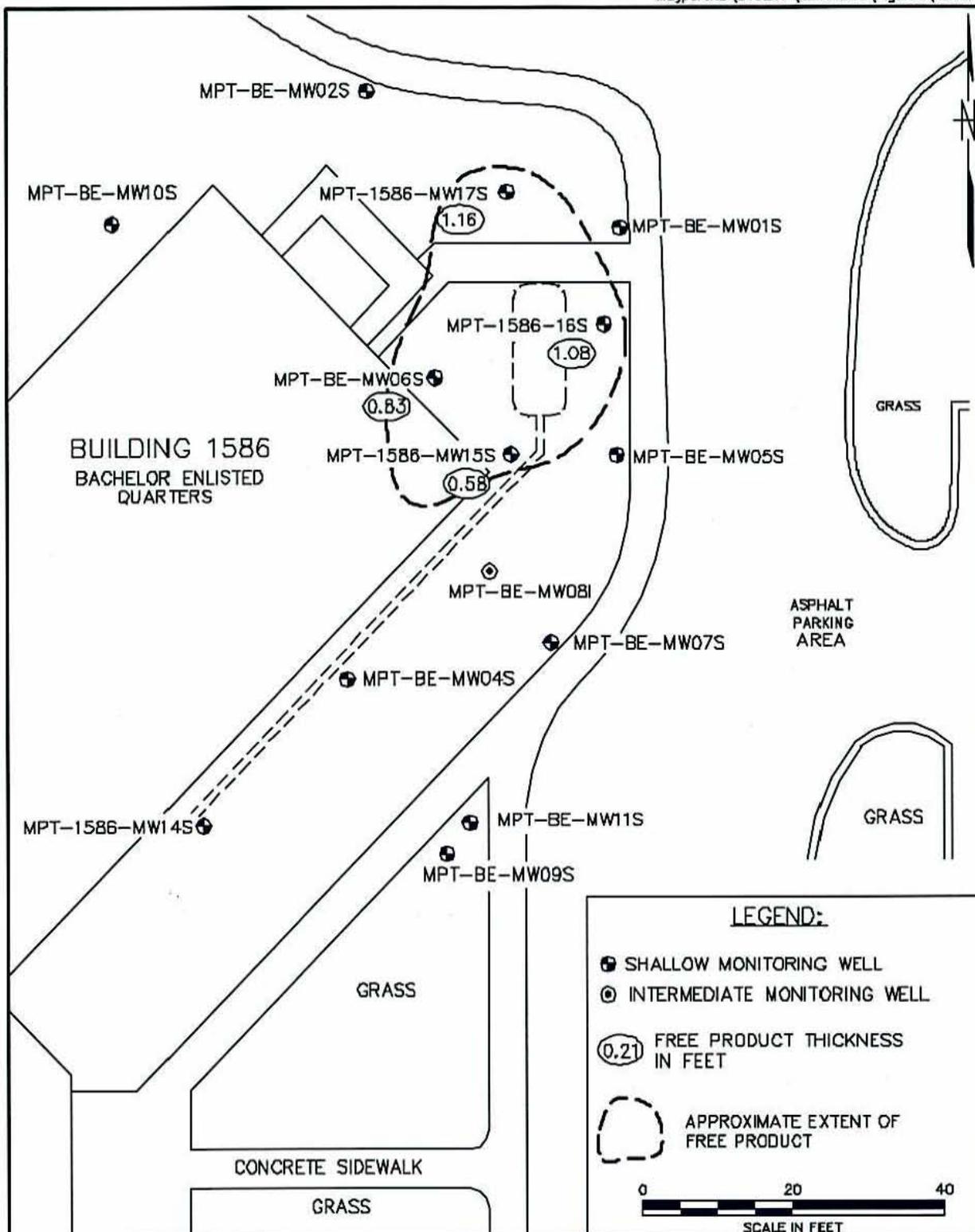
TABLE 2-2
Assumed Monitoring Wells – LNAPL Recovery Tests

Monitoring Well ID	Top of Casing Elevation (feet MSL)	Total Well Depth (feet)	Screened Interval (feet bls)	Diameter (inches)
MPT-BE-MW06S	9.25	13.00	3 to 13*	2
MPT-1586-MW15S	8.76	13.00	3 to 13	2
MPT-1586-MW16S	8.21	13.00	3 to 13	2
MPT-1586-MW17S	8.24	13.00	3 to 13	2

MSL = mean sea level
* = presumed screened interval
S = shallow well

The following procedures will be used to perform LNAPL recovery testing on each of the required monitoring wells:

1. To continuously monitor hydraulic head in the well, install an electronic data logging pressure transducer (vented miniTROLL Model SSP 100 or equivalent) at the test well location. Assuming a 0 to 10 pound per square inch (psi) sensing range, place the transducer at the bottom of the monitoring well to ensure instrument operation is not affected by the LNAPL recovery test.
2. Following pressure transducer installation, measure and record the static LNAPL and groundwater levels from the reference point (north side of top of casing) to an accuracy of 0.01-foot using the electronic oil/water interface probe. Once the LNAPL and groundwater levels have been measured, the probe will be raised and set at approximately 3 to 4 inches above the LNAPL/groundwater interface, and will remain in the well during the LNAPL recovery test.



DRAWN BY LLK	DATE 3/31/03	APPROXIMATE EXTENT OF FREE PRODUCT SITE 1586 SITE ASSESSMENT REPORT MAYPORT NAVAL STATION MAYPORT, FLORIDA	CONTRACT NO. 4240	
CHECKED BY	DATE		APPROVED BY	DATE
COST/SCHED-AREA			APPROVED BY	DATE
SCALE AS NOTED			DRAWING NO. FIGURE 2-2	REV. 0

3. Allow conditions to stabilize in the monitoring well. Collect baseline readings for approximately 4 hours.
4. Set peristaltic pump intake at approximately 2 inches into the LNAPL. The peristaltic pump will be capable of flow rates as low as 1 milliliter/minute (mL/min).
5. Slowly pump LNAPL and attempt to achieve steady-state drawdown by observing data logger readings. Steady-state will be verified by relatively constant data logger readings. The peristaltic pump initially will be set at the lowest flow rate and increased as much as possible while still achieving steady-state drawdown. The electronic oil/water interface probe will be used to determine if fluid replacement in the well during testing is groundwater or LNAPL by measuring if the groundwater level increases and contacts the probe. Probe placement will be modified during the test, as necessary, to monitor the LNAPL thickness and LNAPL/groundwater interface.
6. Record pumping rates, date/time, volume recovered, and hydraulic head (data logger reading). Observe test for sufficient time (approximately 3 to 4 hours) to ensure steady-state has been reached.
7. The LNAPL thickness will not be reduced to less than 2 inches to keep the LNAPL saturation pathway for product recovery. This will be ensured during testing by using the electronic oil/water interface probe to monitor the LNAPL and groundwater levels and the placement of the peristaltic pump intake resulting in groundwater removal at a LNAPL thickness of 2 inches. There is also the potential for variable recharge rates due to fill and native soil zone effects.
8. Following test completion, measure and record the LNAPL and groundwater levels from the reference point (north side of top of casing) to an accuracy of 0.01-foot using the electronic oil/water interface probe. Remove the oil/water interface probe and decontaminate in accordance with Section 3.5 of this Work Plan Addendum.
9. Remove the pressure transducer and decontaminate in accordance with Section 3.5 of this Work Plan Addendum.

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

All generated or accumulated contaminated wastes (recovered LNAPL, petroleum-contact water, decontamination water, etc.) will be collected in 55-gallon drums, 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 pilot study activities. Water accumulated during the decontamination process will be collected in 55-gallon drums, 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, debris or solid waste material remaining following site 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 Technical Memorandum

A Technical Memorandum will be prepared to document the completed preliminary pilot study activities included in this Work Plan Addendum and will include:

- Introduction
- Summary of action and any deviations encountered
- Site drawings
- Potentiometric surface map
- Complete set of all field test results, including LNAPL/groundwater elevation measurements and LNAPL recovery test measurements
- Complete set of all laboratory analytical results, including waste characterization laboratory analytical results
- Site photographs
- 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 or recycle
- Technology/literature evaluation results
- Conclusions and Site Recommendations

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 | 4 weeks |
| • Mobilization and site preparation | 1 day |
| • Synoptic LNAPL/groundwater elevation survey | 1 day |
| • LNAPL recovery testing | 4 days |
| • Technology/literature evaluation | 8 weeks |
| • Technical Memorandum preparation and submittal | 8 weeks |

CH2M HILL anticipates the total project duration will be approximately 17 weeks with some of the above project activities being completed concurrently. This proposed schedule may vary depending on the actual conditions encountered in the field.

2.3 Communications Plan

A communication matrix outlining the lines of communications for NAVFAC EFD SOUTH and CH2M HILL is presented in Table 2-3. Table 2-4 provides a project personnel directory.

TABLE 2-3
Communications Matrix

CH2M HILL Position	Navy Direct Report
Phil Smith, 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 Adrienne Wilson, RPM Larry Blackburn, NTR/ROICC Diane Racine, NAVSTA Mayport

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

TABLE 2-4
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
Dorothy Okamoto, COTR	As above 843/820-5940
Adrienne Wilson, RPM	As above 843/820-5582

TABLE 2-4
Project Personnel Directory

Contact	Company
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
Diane Racine, NAVSTA Mayport	Environmental Department Code N4E2 Building 2021 NAVSTA Mayport, FL 32228 904/270-6730 x 208

2.4 Traffic Control Plan

Traffic control will be the responsibility of the CH2M HILL Site Manager/Superintendent. CH2M HILL will minimize disturbance to NAVSTA Mayport and Building 1586 traffic patterns during project activities. CH2M HILL will consult with onsite personnel to evaluate site access, placement of equipment, and traffic flow to minimize the impact of this work to site operations.

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
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 (Do not composite VOCs)	SS spoon, SS bowl	14 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		

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
<i>Liquid Characterization Sampling</i>													
Liquid Characterization Sampling	Drums	Water	As necessary	2	Grab	Drum thief or dip jar	14 day	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	(4) 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		
									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

3.2 Sampling Objectives

The sampling objectives for this project will be as follows:

- Collect samples for characterization of all recovered liquids (petroleum product, water).
- Collect samples for characterization of equipment/personnel decontamination water.
- Collect samples for characterization of soil/solids, as necessary.

3.3 Liquid Wastes Disposal Characterization

Liquid wastes from the site will be in the form of residual petroleum product, petroleum-contact water, or decontamination water. Liquid wastes will be containerized in 55-gallon drums. 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. First fill the sample containers for volatile analyses. The 40-mL vials will be filled so that there is no headspace in each vial.
3. Fill the sample containers for the remaining analyses.
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.

3.4 Soil/Solid Wastes Disposal Characterization

Soil/solid waste disposal characterization sampling procedures are being included in case of future pilot study activities generating petroleum-contaminated solid waste. It is estimated, if required, 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 Equipment Decontamination

Sampling methods and equipment have been selected to minimize decontamination requirements and the possibility of cross-contamination. The following procedures will be used for all sampling equipment used to collect routine samples undergoing trace organic or inorganic analyses.

Reusable sampling equipment will be decontaminated before the initial sample is collected and between sampling locations using the following procedure:

1. Clean with potable water and Alconox® or equivalent laboratory grade detergent using a brush, if necessary, to remove particulate matter and surface films.
2. Rinse thoroughly with potable water.
3. Rinse thoroughly with analyte-free water.
4. Rinse thoroughly with isopropanol (pesticide-grade). Do not rinse PVC or plastic items with isopropanol.
5. Rinse thoroughly with organic/analyte-free water.
6. Allow equipment to air dry completely.

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 turnaround times (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 client, 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 (rain, extreme heat or cold, wind, etc.)
- Sample Labels
 - Custody Seals (minimum of two on each shipping container)

3.7 Field Quality Control

Field QC samples are not required for disposal characterization samples.

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 petroleum product (LNAPL)
- Petroleum-contact water (mixture of LNAPL and water)
- Decontamination water
- Debris, including discarded materials generally considered not water-soluble. Debris includes, but is not limited to, materials used in LNAPL recovery testing, spill prevention, and decontamination (for example, tubing, 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.

If hazardous waste is identified during the project, Public Works Center Hazardous Waste personnel will coordinate hazardous waste manifesting, transportation, and disposal. Non-hazardous waste manifests will be signed by NAVSTA Mayport personnel and CH2M HILL will coordinate waste transportation and disposal. This Waste Management Plan focuses on the waste management, transportation, and disposal responsibilities of CH2M HILL during project completion.

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 offsite facilities for review. The profile for non-hazardous waste 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. If required, Navy personnel will provide generator certification and/or signature. 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 through D0011) or pesticides (D012 through 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 (LNAPL pump testing)
- Source of contamination (UST fuel oil spill)
- 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 FAC Chapter 62-770, petroleum-contaminated soil (including excessively contaminated soil) will not be stored onsite 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, accumulation start date, and CH2M HILL point-of-contact to facilitate coordination with NAVSTA Mayport personnel. 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 “Analysis Pending” and “Non-Hazardous Waste” labels will be required for this project.

4.2.3 General Waste Management Requirements

Contaminated soil will be contained in 55-gallon drums. Liquid wastes will be contained in 55-gallon drums for offsite disposal at an approved wastewater treatment facility.

Hazardous wastes will be segregated from non-hazardous wastes. Additionally, incompatible wastes (for example, 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. The accumulation area will be coordinated with the NAVSTA Mayport Hazardous Waste Manager prior to mobilization.

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, such as 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 non-hazardous 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, 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
- 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
- Copy of the relevant portion of the Department of Transportation (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 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, and the Certificate of Disposal/Destruction/ Recycle.

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. 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 NAVSTA Mayport.

4.4.2 Disposal

Offsite treatment, recycling or disposal facilities will use the waste profile and supporting documentation, such as analytical results and flow-rate data, to determine if the facility 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:

- 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 offsite 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, 1999) 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 pilot study activities at Site 1586, NAVSTA Mayport.

5.1 Regulatory Drivers

Remedial activities at Site 1586 are regulated under the State of Florida's Petroleum Program. All solid/hazardous waste and media will be characterized and managed according to the requirements of FAC Chapter 62-730, Hazardous Waste regulations. Management of petroleum contaminated wastes and remedial activities will comply with the provisions of FAC Chapter 62-770, Petroleum Contamination Site Cleanup 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.

- Contact NAVSTA Mayport Fire Department at 904-270-5333.
- 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 4.0 Waste Management Plan) and disposed of according to applicable federal, state, and local requirements.

5.6 Erosion Control

During pilot study 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 Quality Control Plan details the quality administrators, the project organization, and the QC inspections associated with the work to be completed at Site 1586, NAVSTA Mayport.

The Submittal Register, included in Appendix C, documents submittals. 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 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.

6.1 Project QC Manager

The Project QC Manager for this project is Jeff Marks. The appointment letter for Mr. Marks is included in Appendix C.

6.2 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.

6.2.1 Identification and Certification of Testing Laboratories

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

6.2.2 Construction

Construction testing for this project is not anticipated, however, if required, 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.

6.2.3 Environmental

Laboratories performing analytical analysis of environmental samples will be approved by the Navy, USACE, or AFCEE, and FDEP.

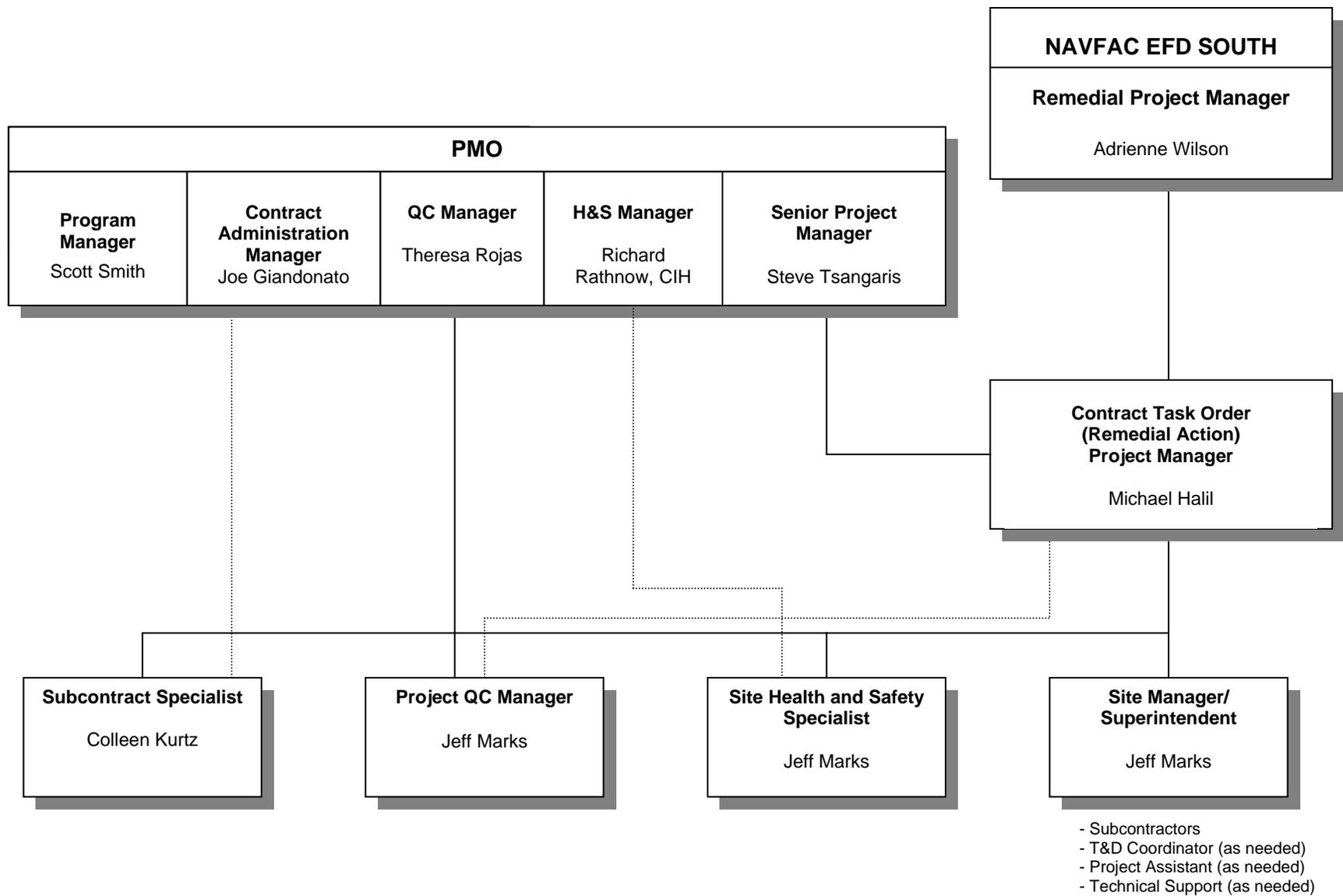


TABLE 6-1
Roles, Responsibilities, and Authorities of Key Project Personnel

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 NAVFAC EDF SOUTH • 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
Engineering Manager	<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
Roles, Responsibilities, and Authorities of Key Project Personnel

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 	

6.3 QC Inspections

The Project QC Manager will perform final inspections of the materials and overall work activities. The inspections are performed to ensure safe, efficient, high quality work is performed, while meeting the objectives and requirements of the plans and specifications.

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

- Mobilization and Site Preparation
- LNAPL/Groundwater Elevation Survey
- LNAPL Recovery Testing
- Field Sampling
- Waste Management
- Decontamination and Demobilization

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 subsections that follow.

6.4 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, staging of equipment and material, and installation of erosion and sediment transport controls, as necessary, are in place. Additionally, equipment and materials will be verified functional and in good working condition prior to starting the project.

6.4.1 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.

6.4.2 Initial Phase

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

6.4.3 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.

Table 6-2 lists the quality controls that will be implemented during mobilization and site preparation activities.

TABLE 6-2
QC Procedures for Mobilization and Site Preparation

Task	Procedures/Construction Details
Pre-construction Meeting	<ul style="list-style-type: none"> • Verification of excavation permit and utility clearance from Environmental Division Public Works Center (PWC), NAVSTA Mayport (as necessary) • Verification of designated locations of equipment layout, material and waste staging, and decontamination
Site Walk	<ul style="list-style-type: none"> • Verification of site layout plan • Verification of Environmental Conditions Report
Pre-construction Submittals	<ul style="list-style-type: none"> • Subcontractor plans and specifications • Subcontractor personnel qualification and certifications
Temporary Facilities	<ul style="list-style-type: none"> • Verification of temporary facilities for conformance with NAVSTA Mayport requirements • Verification of temporary utility hookups for conformance with the utility and the base requirements • Verify implementation of environmental protection measures (erosion and sediment control)

6.5 LNAPL/Groundwater Elevation Survey

Prior to LNAPL recovery testing, LNAPL and groundwater elevations will be measured to determine product thickness and distribution in site monitoring wells. Elevation measurements will be collected from the wells listed in Table 2-1.

6.5.1 Preparatory Phase

The preparatory phase will include the following: a review of the relevant AHAs, a review of the requirements provided in the Work Plan Addendum and the site-specific Health and Safety Plan; and confirming the appropriate equipment, resources, and qualified personnel are available to perform the work. Containers and waste staging areas will be prepared and managed in accordance with the protocols of the Waste Management Plan.

6.5.2 Initial Phase

Prior to the start of the LNAPL/groundwater elevation survey, the Project QC Manager will complete the initial inspection of the planned operation. The inspection will evaluate personnel qualifications, equipment conditions, and site arrangements. The Project QC Manager will check the monitoring well for proper identification and location and inspect the well head for any signs of forced entry, which could invalidate the measurement data. Deficiencies will be documented and corrected prior to starting the activity.

6.5.3 Follow-up Phase

The Project QC Manager will be responsible for the ongoing inspection during the LNAPL/groundwater elevation survey. Surveillance will verify that the work is completed in accordance with the requirements provided in this Work Plan Addendum. Deficiencies will be noted and corrected. The daily activity will be documented in the Daily Contractor Quality Control Report.

Table 6-3 lists the quality controls that will be implemented during the LNAPL/groundwater elevation survey.

TABLE 6-3
QC Procedures for LNAPL/Groundwater Elevation Survey

Task	Procedures/Construction Details
LNAPL/Groundwater Elevation Survey	<ul style="list-style-type: none"> • Verify personnel qualifications • Verify appropriate equipment • Verify well proper identification and location • Verify well head integrity • Verify accuracy of 0.01-foot for oil/water interface probe measurements • Verify measurement to reference point (north side of top of casing) • Verify the field instruments are calibrated in accordance with manufacturers' recommendations • Verify equipment decontamination • Verify recording forms, including all of the test documentation requirements, have been prepared and are accurate and complete

6.6 LNAPL Recovery Testing

LNAPL recovery tests are anticipated to be performed on the monitoring wells listed in Table 2-2. Recovery tests will be conducted using a peristaltic-style positive displacement pump. Proposed test wells were selected based on the presence of LNAPL in these monitoring locations at the time of the SA. Results of the synoptic LNAPL/groundwater elevation survey will be used to refine test locations as necessary.

6.6.1 Preparatory Phase

The preparatory phase will include the following: a review of the relevant AHAs, a review of the requirements provided in the Work Plan Addendum and the site-specific Health and Safety Plan; and confirming the appropriate equipment, resources, and qualified personnel are available to perform the work. Containers and waste staging areas will be prepared and managed in accordance with the protocols of the Waste Management Plan.

6.6.2 Initial Phase

Prior to the start of the LNAPL recovery testing, the Project QC Manager will complete the initial inspection of the planned operation. The inspection will evaluate personnel qualifications, equipment conditions, and site arrangements. The Project QC Manager will verify the proper sensing range and in-well placement of the pressure transducer. The Project QC Manager will verify the placement of the electronic oil/water interface probe and peristaltic pump intake prior to testing. The peristaltic pump will be capable of flow rates as low as 1 mL/min. Deficiencies will be documented and corrected prior to starting the activity.

6.6.3 Follow-up Phase

The Project QC Manager will be responsible for the ongoing inspection during LNAPL recovery testing. Surveillance will verify that the work is completed in accordance with the requirements provided in this Work Plan Addendum. Deficiencies will be noted and corrected. The daily activity will be documented in the Daily Contractor Quality Control Report.

Table 6-4 lists the quality controls that will be implemented during LNAPL recovery testing.

TABLE 6-4
QC Procedures for LNAPL Recovery Testing

Task	Procedures/Construction Details
LNAPL Recovery Testing	<ul style="list-style-type: none"> • Verify personnel qualifications • Verify appropriate equipment • Verify well proper identification and location • Verify pressure transducer sensing range • Verify pressure transducer in-well placement • Verify accuracy of 0.01-foot for oil/water interface probe measurements • Verify measurement to reference point (north side of top of casing) • Verify oil/water interface probe in-well placement • Verify well stabilization time of 4 hours • Verify minimum peristaltic pump flow rate of 1 mL/min • Verify peristaltic pump intake placement • Verify minimum LNAPL saturation pathway of 2 inches was maintained • Verify the field instruments are calibrated in accordance with manufacturers' recommendations • Verify equipment decontamination • Verify recording forms, including all of the test documentation requirements, have been prepared and are accurate and complete

6.7 Field Sampling

Waste characterization samples will be collected. Environmental samples will be collected in accordance with EPA 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.

6.7.1 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.

6.7.2 Initial Phase

Waste characterization samples will be collected and subsequently analyzed at an approved laboratory in accordance with methods outlined in the project-specific SAP. Sample collection activities, including proper chain-of-custody documentation, will follow the protocols outlined in the project-specific SAP.

6.7.3 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.

Table 6-5 lists the quality controls that will be implemented during field sampling activities.

TABLE 6-5
QC Procedures for Field Sampling

Task	Procedures/Construction Details
Field Sampling	<ul style="list-style-type: none"> • Verify laboratory and credentials • Verify appropriate sampling equipment • Verify equipment decontamination • Verify appropriate facilities and testing equipment are available and comply with testing standards • Verify the field instruments are calibrated in accordance with manufacturers' recommendations • Verify recording forms, including all of the test documentation requirements, have been prepared and are accurate and complete

6.8 Waste Management

6.8.1 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.

6.8.2 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.

6.8.3 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.

Table 6-6 lists the quality controls that will be implemented during waste management activities.

TABLE 6-6
QC Procedures for Waste Management

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
Transportation and Disposal	<ul style="list-style-type: none"> • Verify waste profile completion (obtain Navy Signature) • Transporter and Disposal facility certificates • Verify stockpile and waste storage area inspection

6.9 Decontamination and Demobilization

Personnel and equipment 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 pilot study 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.

6.9.1 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.

6.9.2 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.

6.9.3 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.

Table 6-7 lists the quality controls that will be implemented during decontamination and demobilization activities.

TABLE 6-7
QC Procedures for Decontamination and Demobilization

Task	Procedures/Construction Details
Decontamination and Demobilization	<ul style="list-style-type: none"> • Pre-final site inspection and develop punch-list items • Work areas to ensure all temporary facilities, equipment and materials are safely removed from the site • Work areas to ensure project housekeeping and cleaning • Decontamination of personnel and equipment • Completion inspection when work is substantially complete • Punch lists on outstanding items • Project housekeeping and final project cleaning • Final Inspections • Orderly Site Demobilization • Collation of Site Records & Documents • Final Reports and Deliverables • Complete Resolution of Punch-list items • Final Site Inspection • Orderly Site Demobilization

6.10CTO Support Organizations

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

7.0 References

CH2M HILL Constructors, Inc. 1999. Basewide Work Plan, Naval Station Mayport, Mayport, Florida. May.

Florida Department of Environmental Protection. 2004. *Department of Environmental Protection Standard Operating Procedures for Field Activities*, DEP-SOP-001/01. February 1, 2004.

Tetra Tech NUS, Inc. 2003. *Site Assessment Report for Site 1586, Naval Station Mayport, Mayport, Florida*. June.

Appendix A

Project Schedule

Appendix B

Site Specific Health and Safety Plan

Health and Safety Plan Product Recovery Pilot Study at Site 1586

Naval Station Mayport
Mayport, Florida

Contract No. N62467-01-R-0331
Contract Task Order No. 0040

Revision 00

Submitted to:



U.S. Naval Facilities
Engineering Command
Southern Division

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March 2006

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Attachments

1	Employee Signoff Form – Field Safety Instructions
2	Project-Specific Chemical Product Hazard Communication Form
3	Chemical-Specific Training Form
4	Emergency Contacts
5	Project Activity Self-Assessment Checklists/Permits/Forms
6	Behavior Based Loss Prevention System Forms
7	Applicable Material Safety Data Sheets
8	Subcontractor H&S Plans/Procedures

Acronyms

°F	degrees Fahrenheit
AHA	Activity Hazard Analysis
ALARA	as low as reasonably achievable
APR	air-purifying respirator
ATL	Atlanta, Georgia
BBLPS	Behavior Based Loss Prevention System
bls	below land surface
CH2M HILL	CH2M HILL Constructors, Inc.
COC	contaminant of concern
CPR	cardiopulmonary resuscitation
CTO	Contract Task Order
DOT	Department of Transportation
FA	first aid
FAC	Florida Administrative Code
FDEP	Florida Environmental Protection Division
FID	flame ionization detector
GCTL	Groundwater Cleanup Target Level
GFCI	ground fault circuit interrupter
HAZCOM	hazard communication
HR	heart rate
HSM	Health and Safety Manager
HSP	Health and Safety Plan
IDLH	immediately dangerous to life and health
IRF	Incident Report Form
lb	pound
LEL	lower explosive limit
LPO	Loss Prevention Observations
MSDS	Material Safety Data Sheet
NAVFAC EFD SOUTH	U.S. Navy Facilities Engineering Command, Southern Division
NAVSTA	Naval Station
NLI	Near Loss Investigation
NTR	Navy Technical Representative
OSHA	Occupational Safety and Health Administration
PID	photoionization detector
PPE	personal protective equipment
ppm	parts per million
PVC	polyvinyl chloride
PTSP	Pre-Task Safety Plan
RMSF	Rocky Mountain Spotted Fever
SA	Site Assessment
SAR	Site Assessment Report
SCTL	Soil Cleanup Target Level
SHSS	Site Health and Safety Specialist
SOP	standard of practice

T&D
TtNUS
UST

transportation and disposal
Tetra Tech NUS, Inc.
underground storage tank

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 Health and Safety Specialist (SHSS) is to be familiar with these SOPs and the contents of this plan. CH2M HILL Constructors Inc.'s (CH2M HILL) personnel and subcontractors must sign Attachment 1.

1.0 Project Information and Description

CONTRACT TASK ORDER (CTO) No: 0012

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

PROJECT/SITE NAME: Naval Station (NAVSTA) Mayport, Building Product Recovery Pilot Study at site 1586

SITE ADDRESS: Southwest corner of Massey Avenue and Supply Street, NAVSTA Mayport

CH2M HILL PROJECT MANAGER: Michael Halil

CH2M HILL OFFICE: Atlanta, Georgia (ATL)

DATE HEALTH AND SAFETY PLAN PREPARED: March 2, 2006

DATE(S) OF SITE WORK: March 2006 to March 2007

SITE BACKGROUND AND SETTING:

NAVSTA Mayport is located within the corporate limits of the city of Jacksonville, Duval County, Florida, approximately 12 miles to the northeast of downtown Jacksonville, and adjacent to the town of Mayport. The station complex is located on the northern end of a peninsula bound by the Atlantic Ocean to the east and the St. Johns River to the north and west. NAVSTA Mayport occupies the entire northern part of the peninsula except for the town of Mayport, which is located to the west between the station and the St. Johns River (Tetra Tech NUS, Inc. [TtNUS], 2003).

Building 1586 is located in the northeastern region of the base. The subject site is located at the end of Building 1586 on the northeastern side. The building is used as the Bachelors' Quarters (TtNUS, 2003).

Building 1586 is constructed with brick and cement block. The surface surrounding the building is grass. The area under investigation is near the eastern corner of the building where an underground storage tank (UST) containing fuel oil is located. The UST is located under a cement slab and has a flush-mount manhole covering the fill port. Underground utilities traverse the site near the UST and twelve existing monitoring wells were located within the area of investigation prior to initiation of the Site Assessment (SA). Two of the twelve monitoring wells, MW-12s and MW-13s, are unfinished wells (temporary wells) with unprotected polyvinyl chloride (PVC) stick risers that were previously installed by another contractor. Surrounding the UST, gravel has been used as backfill and is covered with sod. This backfilled area extends from the area of the UST approximately 40 feet along the south wall of the building. The area of gravel extends out from the dorm wall 15 to 20 feet to the sidewalk, which outlines the UST area and extends along the south side of the dormitory (TtNUS, 2003).

Site 1586 was the focus of a SA to evaluate the extent of petroleum hydrocarbons in soil and groundwater that resulted from a 1991 rupture of a fuel line. This work included the installation of monitoring wells and numerous soil borings. Results of these earlier investigations indicated that Site 1586 was a candidate for natural attenuation. Subsequent monitoring of the site conducted in 1999 and 2000 indicated that petroleum constituents were below Groundwater Cleanup Target Levels (GCTLs), therefore, the site was eligible for closure. However, on April 30, 2000, the contractor installing a new 5,000-gallon double-walled fiberglass UST in the same tank pit as the previously removed 4,000-gallon fuel oil UST, spilled 1,400 gallons of fuel oil. The release was reported to Mr. Jim Cason of the FDEP. The contractor installed free product recovery wells. However, free product extraction was not immediately initiated despite the Navy's attempts to get the contractor to accept responsibility (TtNUS, 2003).

The objective of the completed SA field investigation was to determine the extent of soil and/or groundwater impacts at the site. The data collected during the investigation was used to prepare a SA Report (SAR) as required by Florida Administrative Code (FAC) Chapter 62-770.600. The SAR provided a characterization of site conditions from which to base future courses of action. Based on results obtained during the SA at Site 1586, there is a current impact to the environmental media that would require periodic monitoring or active remediation. The SAR included the following recommendations and conclusions for this site (TtNUS, 2003):

- Free product is present in monitoring wells MPT-BE-MW06S, MPT-1586-MW15S, MPT-1586-MW16S, and MPT-1586-MW17S located around the tank pit.
- Free product removal is currently underway via hand bailing, which is being performed by the Navy.
- "Excessively contaminated soil," as defined by FAC Chapter 62-777.200 is present at the site as determined by organic vapor analysis with flame ionization detector headspace analyses. The soil contamination is present, but appears to be mostly limited to the areas of free product and may be associated with the capillary fringe (5 feet below land surface [bls]). One soil measurement from SB-4 (3 feet bls) did report a concentration of 62 parts per million. Several contaminants of concern (COCs) were reported in this area at concentrations exceeding leachability-based Soil Cleanup Target Levels (SCTLs) in confirmatory soil samples submitted to a certified fixed-base laboratory.
- No petroleum constituents exceeded the GCTLs in fixed-based groundwater analysis from the intermediate well located near the source area or in 20-foot and 40-foot bls groundwater samples collected for mobile laboratory analysis.
- The vertical and horizontal extent of COCs identified in groundwater limits by the mobile laboratory or fixed-base laboratory appears to be limited in extent to the area surrounding the tank pit.
- Groundwater flow direction indicates that one additional down gradient well should be installed. The well will be installed and sampled for Gasoline Analytical Group/Kerosene Analytical Group constituents. The results will be prepared in a SAR Addendum.

The SAR recommended a Remedial Action Plan be prepared to address the free product and impacted soil and groundwater at Site 1586 (TtNUS, 2003).

The Navy is removing LNAPL periodically from site monitoring wells using a peristaltic pump. Table 1-1 provides the LNAPL removal field measurements collected to date.

TABLE 1-1

LNAPL Removal Field Measurements

Monitoring Well ID:	MPT-BE-06S					
Date:	28-Aug-05	1-Oct-05	29-Oct-05	24-Nov-05	27-Dec-05	21-Jan-06
Depth to LNAPL (feet bls)	4.80	4.70	4.90	6.34	6.45	5.30
Depth to Water (feet bls)	6.30	5.70	5.70	7.28	7.45	5.92
LNAPL Thickness (feet)	1.50	1.00	0.80	0.94	1.00	0.62
LNAPL volume removed (mL)	200	500	500	350	700	500
Monitoring Well ID:	MPT-1586-16S					
Date:	28-Aug-05	1-Oct-05	29-Oct-05	24-Nov-05	27-Dec-05	21-Jan-06
Depth to LNAPL (feet bls)	4.70	4.60	3.70	5.28	4.70	5.22
Depth to Water (feet bls)	6.00	5.30	4.20	6.37	5.40	5.61
LNAPL Thickness (feet)	1.30	0.70	0.50	1.09	0.70	0.39
LNAPL volume removed (mL)	350	500	500	600	700	270
Monitoring Well ID:	MPT-1586-17S					
Date:	28-Aug-05	1-Oct-05	29-Oct-05	24-Nov-05	27-Dec-05	21-Jan-06
Depth to LNAPL (feet bls)	4.70	4.60	4.80	5.43	5.52	6.20
Depth to Water (feet bls)	5.40	5.50	5.40	6.21	6.42	7.30
LNAPL Thickness (feet)	0.70	0.90	0.60	0.78	0.90	1.10
LNAPL volume removed (mL)	200	1000	1000	500	800	800

Notes:

1. LNAPL removal field measurements obtained from TtNUS
2. milliliters = mL

DESCRIPTION OF SPECIFIC TASKS TO BE PERFORMED:

Preliminary pilot study activities at Site 1586 will include:

- Technology/literature evaluation for feasible LNAPL recovery option selection
- Mobilization and site preparation
- Synoptic LNAPL/groundwater elevation survey
- LNAPL recovery testing
- Collection, characterization, and T&D of contaminated materials generated or accumulated during pilot study activities
- Decontamination and demobilization
- Preparation and submittal of a Technical Memorandum documenting completion or deviation from pilot study activities described in this Work Plan Addendum

A technology/literature evaluation will be completed to select feasible LNAPL recovery options. The evaluation is planned to include, but not be limited to, the following potential technologies:

- Manual LNAPL Recovery
- Passive LNAPL Skimmers
- Active LNAPL Recovery Systems
- Aggressive Fluid Recovery by vacuum truck
- Vacuum-enhanced LNAPL skimming
- Oil bioremediation products (crude oil spill treatments)

The technology/literature evaluation will incorporate the determined LNAPL recharge rates with available technologies and products, types of application, practicality of using existing 2-inch diameter site wells for LNAPL recovery, aerobic/anaerobic conditions, cost, number of site used, effectiveness, etc.

The data collected during the synoptic LNAPL/groundwater elevation survey and LNAPL recovery tests will be used to assess the feasibility, level of aggressiveness, and configuration of possible LNAPL recovery systems. If practical, historical and current site data will be used to create and verify a site model to assess the recoverability of the LNAPL.

LNAPL recovery tests at each monitoring well where LNAPL is measured to determine LNAPL recharge rates. This data will be used to assess the feasibility, level of aggressiveness, and configuration of possible LNAPL recovery systems.

2.0 Tasks to be Performed Under this Plan

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

2.1 Hazwoper-Regulated Tasks

- Mobilization and site preparation
- A synoptic LNAPL/groundwater elevation survey
- LNAPL recovery testing
- Collection, characterization, and T&D of contaminated materials generated or accumulated during pilot study activities
- Aggressive Fluid Recovery by vacuum truck
- Vacuum-enhanced LNAPL skimming
- Oil bioremediation products (crude oil spill treatments)
- Decontamination and demobilization

2.2 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">• A technology/literature evaluation• Preparation and submittal of a Technical Memorandum documenting completion or deviation from pilot study activities described in this Work Plan Addendum	<ul style="list-style-type: none">• Brief on hazards, limits of access, and emergency procedures

TABLE 2-1
Hazard Analysis
(Refer to Section 3 for hazard controls)

Potential Hazards	Project Activities									
	Mobilization	A synoptic LNAPL/groundwater elevation survey	LNAPL recovery testing	Collection, characterization, and T&D of contaminated materials	Aggressive Fluid Recovery by vacuum truck	Vacuum-enhanced LNAPL skimming	Oil bioremediation products (crude oil spill treatments)	Decontamination and demobilization		
Manual Lifting (HS-29)	X	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)										
Ladders & Stairs(HS-25)	X									
Compressed Gas Cylinders (HS-63)						X				
Buried Utilities		X								
Excavations (HS-32)		X	X							
Fall Protection (HS-31)										
Heavy Equipment (HS-27)			X	X	X	X	X	X		
Confined Space Entry (HS-17)										
Concrete & Masonry Work (HS-43)										
Cranes and Hoisting (HS-44)										
Demolition (HS-45)										
Scaffolding(HS-73)										
Steel erection (HS-62)										
Welding and cutting (HS-22)										
Aerial Lifts (HS-41)										
Hand & Power Tools (HS-50)	X	X	X	X	X	X	X	X		
Forklifts (HS-48)										
Drilling (HS_35)										
Noise (HS-39)	X	X	X	X	X	X	X	X		
Pressurized Lines/Equipment			X		X	X				
Pressure Washing/Equip Decon								X		
Vacuum Truck/Pumping Operations					X	X				
Suspended Loads							X			
Vehicle Traffic	X	X	X	X	X	X		X		
Haul Truck Operations				X						
Visible Lighting	X	X	X	X	X	X	X	X		
Mechanical Guarding Hazards				X			X			
Asbestos Hazard										
Lead Hazard										
Chemical Hazard-Dermal/Inhalation	X	X	X	X	X	X	X	X		
Dust Hazard (Silica/Metals)										
Fire/Explosion Hazards				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 is 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 3.1 and 3.2 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 will 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 Project-Specific Hazards

3.1.1 Underground Utility Locate Requirements

Do not begin subsurface construction activities (e.g., trenching, excavation, drilling, etc.) until a check for underground utilities and similar obstructions has been conducted. The use of as-built drawings and utility company searches must be supplemented with a geophysical or other survey by a qualified, independent survey contractor to identify additional and undiscovered buried utilities.

Examples of the type of geophysical technologies include:

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

The following procedures will be used to identify and mark underground utilities during subsurface construction activities on the project:

- The survey contractor shall determine the most appropriate geophysical technique or combinations of techniques to identify the buried utilities on the project, based on the survey contractor's experience and expertise, types of utilities anticipated to be present and specific site conditions.
- The survey contractor shall employ the same geophysical techniques used on the project to identify the buried utilities, to survey the proposed path of subsurface construction work to confirm no buried utilities are present.
- Identify customer specific permit and/or procedural requirements for excavation and drilling activities. For military installations contact the Base Civil Engineer and obtain the appropriate form to begin the clearance process.
- Contact utility companies or the state/regional utility protection service at least two (2) working days prior to excavation activities to advise of the proposed work, and ask them to establish the location of the utility underground installations prior to the start of actual excavation.
- Schedule the independent survey.
- Obtain utility clearances for subsurface work on both public and private property.
- Clearances are to be in writing, signed by the party conducting the clearance.

- Underground utility locations must be physically verified by hand digging using wood or fiberglass-handled tools when any adjacent subsurface construction activity (e.g. mechanical drilling, excavating) work is expected to come within 5 feet of the marked underground system. If subsurface construction activity is within 5 feet and parallel to a marked existing utility, the utility location must be exposed and verified by hand digging every 100 feet.
- Protect and preserve the markings of approximate locations of facilities until the markings are no longer required for safe and proper excavations. If the markings of utility locations are destroyed or removed before excavation commences or is completed, the Project Manager must notify the utility company or utility protection service to inform them that the markings have been destroyed.
- Conduct a site briefing for employees regarding the hazards associated with working near the utilities and the means by which the operation will maintain a safe working environment. Detail the method used to isolate the utility and the hazards presented by breaching the isolation..

Monitor for signs of utilities during advancement of intrusive work (e.g., sudden change in advancement of auger or split spoon during drilling or change in color, texture or density during excavation that could indicate the ground has been previously disturbed).

3.1.2 Drilling Safety

- The drill rig is not to be operated in inclement weather.
- The driller is to verify that the rig is properly leveled and stabilized before raising the mast.
- Personnel should be cleared from the sides and rear of the rig before the mast is raised.
- The driller is not to drive the rig with the mast in the raised position.
- The driller must check for overhead power lines before raising the mast. A minimum distance of 15 feet between mast and overhead lines (<50 kV) is recommended. Increased separation may be required for lines greater than 50 kV.
- Personnel should stand clear before rig startup.
- The driller is to verify that the rig is in neutral when the operator is not at the controls.
- Become familiar with the hazards associated with the drilling method used (cable tool, air rotary, hollow-stem auger, etc.).
- Do not wear loose-fitting clothing, watches, etc., that could get caught in moving parts.
- Do not smoke or permit other spark-producing equipment around the drill rig.
- The drill rig must be equipped with a kill wire or switch, and personnel are to be informed of its location.
- Be aware and stand clear of heavy objects that are hoisted overhead.

- The driller is to verify that the rig is properly maintained in accordance with the drilling company's maintenance program.
- The driller is to verify that all machine guards are in place while the rig is in operation.
- The driller is responsible for housekeeping (maintaining a clean work area).
- The drill rig should be equipped with at least one fire extinguisher.
- If the drill rig comes into contact with electrical wires and becomes electrically energized, do not touch any part of the rig or any person in contact with the rig, and stay as far away as possible. Notify emergency personnel immediately

3.1.3 Excavation Activities

- 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.

3.1.4 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.

3.1.5 Operating Heavy 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' from the powerlines < 50 kV. Provide an additional 4' 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.

3.1.6 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.

3.1.7 Uneven Walking Surfaces

- Employees walking in ditches, swales and other drainage structures adjacent to roads or across undeveloped land must use caution to prevent slips and falls which can result in twisted or sprained ankles, knees, and backs.
- Whenever possible operate from a flat surface and do not enter a steep ditch or hillside.
- If steep terrain must be negotiated, sturdy leather safety shoes or boots with that provide a high degree of traction and ankle support should be used. The need for ladders or ropes to provide stability should be evaluated.
- Avoid extremely tall grass/vegetation areas where the ground surface level can not readily be anticipated or directly observed.
- Clear and grub heavily covered areas where possible prior to conducting regular activities in the work area.

3.1.8 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.

3.1.9 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.

3.2 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 require 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.

3.2.5 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 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 one to two 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!

3.2.6.1 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.

3.3 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 permethrin 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 percent DEET (N,N-diethyl-meta-toluamide). DEET in high concentrations (greater than 35 percent) provides no additional protection.
- Repellents may irritate the eyes and mouth, so avoid applying repellent to the hands.
- Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer's DIRECTIONS FOR USE, as printed on the product.

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

3.3.6.1 Symptoms of Exposure to the West Nile Virus

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

- The West Nile Virus incubation period is from 3-15 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

Contaminant	Location and Maximum ^a Concentration (ppm)	Exposure Limit ^b	IDLH ^c	Symptoms and Effects of Exposure	PIP ^d (eV)
JP Fuel	SS: TBD Product @ Fuel Recovery System	5 mg/m3 as mist		Eye and skin irritation, gastrointestinal irritation, nausea, vomiting and diarrhea – see MSDS	
Benzene	TBD	1 ppm	500 Ca	Eye, nose, skin, and respiratory irritation; headache; nausea; dermatitis; fatigue; giddiness; staggered gait; bone marrow depression	9.24
Ethyl Benzene	TBD	100 ppm	800	Eye, skin, and mucous membrane irritation; headache; dermatitis; narcotic; coma	8.76
Toluene	TBD	50 ppm	500	Eye and nose irritation, fatigue, weakness, confusion, dizziness, headache, dilated pupils, excessive tearing, nervousness, muscle fatigue, paresthesia, dermatitis, liver and kidney damage	8.82
TRPH	TBD	100 mg/m ³	1000	Eye, skin, and nose irritation; headache; dizziness; vomiting; dermatitis, burning sensation, in chest, weakness, chemical pneumonia	UK
Xylenes	TBD	100 ppm	900	Irritated eyes, skin, nose, and throat; dizziness; excitement; drowsiness; incoherence; staggering gait; corneal vacuolization; anorexia; nausea; vomiting; abdominal pain; dermatitis	8.56

Footnotes:
^a Specify sample-designation and media: SB (Soil Boring).
^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	JAX	Project Manager	FA/CPR
Richard Rathnow	ORO	Health and Safety Manager	SHSS/FA-CPR

4.2 Field Team Chain of Command and Communication Procedures

4.2.1 NAVFAC EFD SOUTH

Eva Clement, CO	Southern Division NAVFAC P.O. Box 190010 North Charleston, SC 29419-9010 843/820-5518
Richard Stanley, ACO	As above 843/820-5939
Jimmy Jones, COTR	As above 843/820-5544
Beverly Washington, RPM	As above 843/820-5581

Larry Blackburn, NTR/ROICC	Southern Division NAVFAC Resident Officer in Charge of Construction P. O. Box 139, Building 13 NAS Jacksonville, FL 32212-0139 904/542-5571, ext. 260
Cheryl Mitchell, NS Mayport Environmental Manager	Staff Civil Engineer Environmental Division Building 1538 NS Mayport, FL 32227 904/270-6730

4.2.2 CH2M HILL

Scott Smith, Senior Project Manager	CH2M HILL Constructors, Inc 115 Perimeter Center Place, N.E. Suite 700 Atlanta, GA 30346-1278 770/604-9095
Richard Rathnow, Health and Safety Manager	CH2M HILL Constructors, Inc Oak Ridge, TN 865/483-9005
Michael Halil, Project Manager	CH2M HILL Constructors, Inc. 6219 Authority Avenue Jacksonville, FL 32221 904/777-4812

The 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 HSM 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."
- 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 Subcontractors

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

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

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

PPE Specifications are listed in Table 5-1.

TABLE 5-1
PPE Specifications^a

Task	Level	Body	Head	Respirator ^b
General site entry Oversight of remediation and construction Demobilization	D	Work clothes; steel-toe, leather work boots; work glove.	Hardhat ^c Safety glasses Ear protection ^d	None required
A synoptic LNAPL/groundwater elevation survey LNAPL recovery testing	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
Source Area if contaminated materials encountered Collection, characterization, and T&D of contaminated materials generated or accumulated during pilot study activities Aggressive Fluid Recovery by vacuum truck Vacuum-enhanced LNAPL skimming Oil bioremediation products (crude oil spill treatments) Decontamination and demobilization	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.
Per Table 6.1 Upgrade	C	Coveralls: Polycoated Tyvek® Boots: Safety -toe, chemical- resistant boots OR Safety -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 .

TABLE 5-1
PPE Specifications^a

Task	Level	Body	Head	Respirator ^b
Per Table 6.1 Upgrade	B	Coveralls: Polycoated Tyvek® Boots: Safety -toe, chemical-resistant boots OR Safety -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

Air Monitoring Specifications are listed in Table 6-1.

TABLE 6-1
Air Monitoring Specifications

Instrument	Tasks	Action Levels ^a		Frequency ^b	Calibration
PID: OVM with 10.6eV lamp or equivalent	All intrusive operations	Up to 1ppm 1-5 ppm	Level D Level D; collect benzene tube; benzene action level not exceeded	Initially and periodically during task	Daily
	Recovery operations				
	Vac Truck Operations	5-25 ppm	Level C: collect benzene tube; benzene action level not exceeded		
	Collection, characterization, and T&D of contaminated materials	> 25 ppm	Level B: Contact HSM		
CGI: MSA model 260 or 261 or equivalent	Intrusive Operations,	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
	O&M activities				
Dust Monitor Visual Assessment	Soil activities where dust generation is possible	No Visible Dust	Level D	Initially and periodically during tasks	Zero Daily
		Visible Dust	Use dust suppression methods		
Detector Tube: Drager benzene specific 0.5/c (0.5 to 10 ppm range) with pre-tube, or equivalent	All Intrusive Activities, Vac Truck and Recovery Operations	<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
	Collection, characterization, and T&D of contaminated materials				

^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)

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

TABLE 6-2
Air Monitoring Equipment Calibration Specifications

Instrument	Gas	Span	Reading	Method
PID: 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.

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.

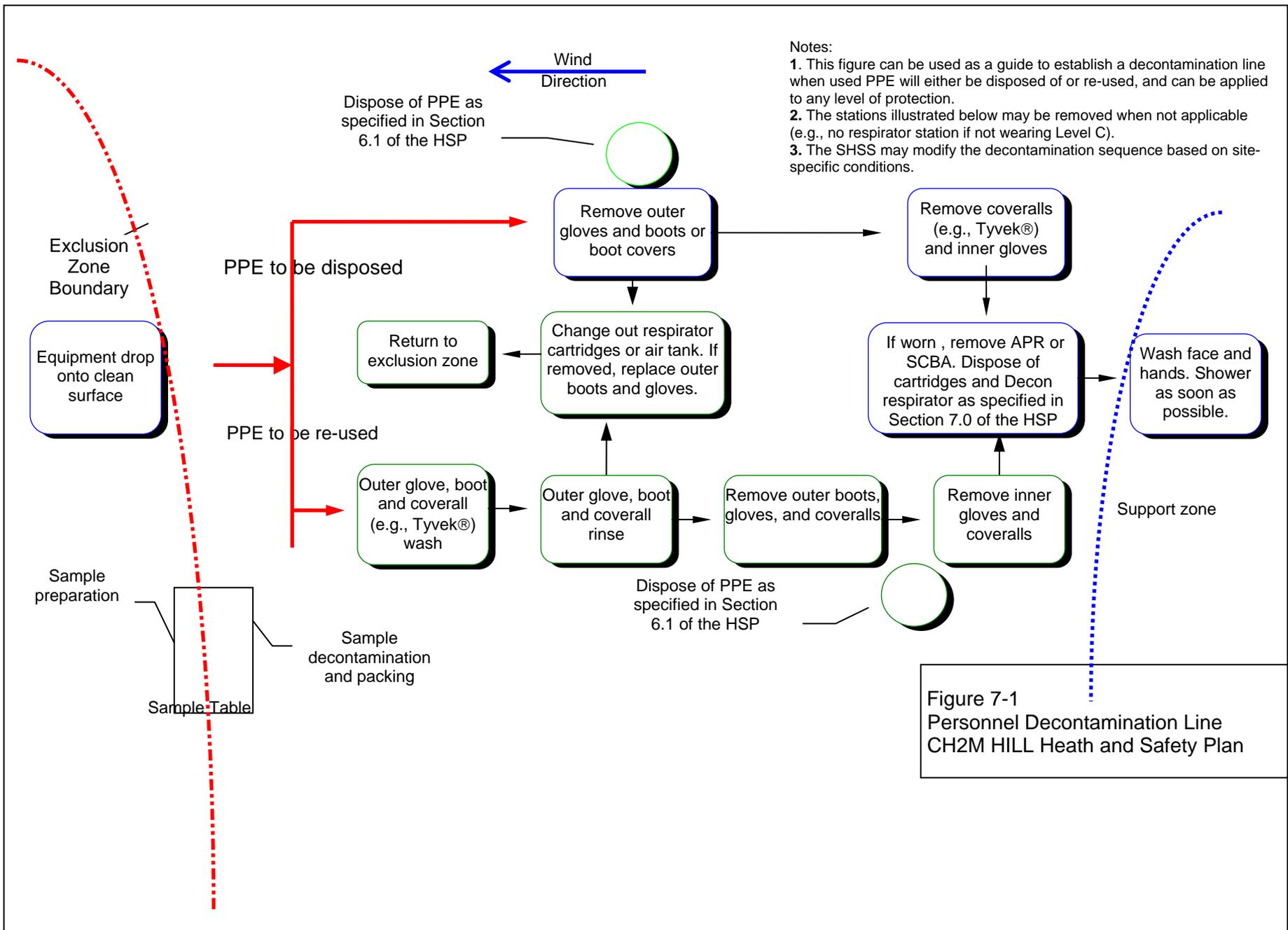
7.1 Decontamination Specifications

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.
- 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 SHSS 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 might occur consecutively or concurrently with respect to non-Hazwoper tasks. This section outlines procedures to be followed when approved activities 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.
- 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 hours 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.
- 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

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 (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 10.7.

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 (Attachment)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 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 AHAs.

CH2M HILL subcontractors are required to provide AHAs 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/AHAs 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 (LPOs) 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. LPOs 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 are 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.

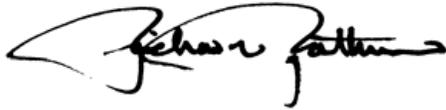
12.1 Original Plan

Written By: Rich Rathnow, CIH

Date: March 2, 2006

Approved By: Rich Rathnow

Date: 3March 2, 2006



12.2 Revisions

Revisions Made By:

Date:

Revisions to Plan:

Revisions Approved By:

Date:

Attachment 1

Employee Signoff Form

Attachment 2

Project-Specific Chemical Product Hazard Communication Form

Attachment 3

Chemical Specific Training Form

CHEMICAL-SPECIFIC TRAINING FORM

Location:	Project # :
SHSS:	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.

Attachment 4

Emergency Contacts

Emergency Contacts-

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
Phone:

CH2M HILL Human Resources Department

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

Project Manager

Name: Michael Halil
Phone: (770)604-9095

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:

Baptist Medical Center - Beaches

Hospital Phone #: Hospital

Phone #: 904/247-2900

Directions to Hospital

Route to Hospital:

Leave Base and proceed SOUTH on Mayport Road	3.7 miles
Mayport Road becomes SR A1A	0.5 Miles
Turn LEFT at intersection of Atlantic Blvd (stay with SR-A1A)	0.1 miles
Exit SR-10/Atlantic Blvd Ramp	0.1 miles
Merge onto Atlantic Blvd and proceed	1.1 miles
Turn RIGHT on North 3rd Street and proceed	3.4 miles
Turn RIGHT on South 13th Ave and proceed	0.6 miles
Baptist Medical Center is on LEFT	
Total Distance 9.5 miles	Travel time: ~25 minutes



Directions

[Show Turn by Turn Maps](#)

1.	Start on FL-134 (at NORMANDY BLVD & 103RD ST in JACKSONVILLE) - go < 0.1 mi
2.	Bear L on FL-228 - go 2.9 mi
3.	Turn L on CHAFFEE RD S - go 2.8 mi
4.	Bear R to take I-10 EAST - go 10.0 mi
5.	Take ramp onto I-95 SOUTH - go 1.2 mi
6.	Take exit #350B - go 0.4 mi
7.	Turn L on PRUDENTIAL DR - go 0.1 mi
8.	Arrive at 800 PRUDENTIAL DR, JACKSONVILLE , on the L

Attachment 5

Project Activity Self-Assessment Checklists/Permits

Traffic Control

Hand and Power Tools

CH2MHILL

H&S Self-Assessment Checklist – TRAFFIC CONTROL

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 traffic hazards and/or 2) CH2M HILL provides oversight of subcontractor personnel who are exposed to traffic hazards.

SSC or DSC may consult with subcontractors when completing this checklist, but shall not direct the means and methods of traffic control 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.

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 traffic hazards.
 Evaluate a CH2M HILL subcontractor’s compliance with traffic control 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-24.

<u>SECTION 1</u>				
SAFE WORK PRACTICES (3.1)	<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>N/O</u>
1. Personnel working on/adjacent to active roadways or in control zones are wearing safety vests.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Traffic control plan (TCP) is consistent with roadway, traffic, and working conditions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. TCP has been approved by regulatory or contractual authority prior to work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. TCP considers all factors that may influence traffic related hazards and controls.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Work areas are protected by rigid barriers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Lookouts are used when applicable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Vehicles are parked 40 feet away from work zone or are equipped with hazard beacon/strobe.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. TMCC or TMA vehicle is used where appropriate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. All CH2M HILL traffic control devices conform to MUTCD standards.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Traffic control devices are inspected continuously.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Flagging is only used when other means of traffic control are inadequate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Additional traffic control zone controls have been implemented.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Cranes do not swing loads/booms over nor do workers enter/cross live roadways (as defined).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>SECTION 2</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>N/O</u>
GENERAL (3.2.1)				
14. Lane closings are performed when required by this SOP.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Traffic control configurations are based on an engineering study of the location.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If no study, traffic control is performed with approval of the authority having jurisdiction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. TCP has been prepared and understood by all responsible parties prior to work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Special preparation/coordination with external parties has been conducted where applicable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. All contractor traffic control devices conform to MUTCD standards.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Traffic movement and flow are inhibited or disrupted as little as possible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Supplemental equipment and activities do not interfere with traffic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Drivers and pedestrians are considered when entering and traversing traffic control zone.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TRAFFIC CONTROL ZONES (3.2.2)				
23. Traffic control zones are divided into the necessary five areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Advances warning area is designed based on conditions of speed, roadways, and driver needs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Advanced warning signage is spaced according to roadway type and conditions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Transition areas are used to channelize traffic around the work area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Buffer areas are used to provide a margin of safety for traffic and workers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. The buffer area is free of equipment, workers, materials, and worker vehicles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. The length of the buffer area is two times the posted speed limit in feet.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. All work is contained in the work area and is closed to all traffic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. A termination area is used to provide traffic to return to normal lanes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. A downstream taper is installed in the termination area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DEVICE INSTALLATION AND REMOVAL (3.2.3)				
33. All vehicles involved with device installation/removal have hazard beacons/strobes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Devices are installed according to the order established by this SOP.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. Devices are removed in the opposite order of installation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. Tapers are used to move traffic out of its normal path.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Tapers are created using channelizing devices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. The length of taper is determined by posted speed and width of lane to be closed (see formula).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Local police or highway patrol assist during taper installation and removal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. TMCC/ TMA vehicles are used to protect personnel during installation and removal of devices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. Cone trucks are equipped with platforms and railings.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Cones are the appropriate height for the specific roadway and are reflectorized.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43. Temporary sign supports are secured using sandbags to prevent movement.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44. Arrow panels are used on lane closures where required.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45. Concrete barriers are used where required.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46. Barrels, crash cushions, or energy absorbing terminals are used to protect traffic as required.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47. Changeable message signs (CMS) are used as required.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48. CMS are not used to replace required signage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49. No more than two message panels are used in any message cycle on CMS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FLAGGING (3.2.4)				
50. Flagging is used only when other traffic control methods are inadequate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51. Only approved personnel with current certification are allowed to be used as flaggers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
52. Flaggers are located off the traveled portion of the roadway.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53. A communication system is established when more than one flagger is used.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
54. Hand signaling by flaggers is by means of red flags, sign paddles, or red lights.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
55. Flaggers are alert, positioned close enough to warn work crews, and easily identified from crew.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
56. An escape plan is established by crew and flaggers prior to traffic control set up.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
57. Signs indicating a flagger is present are used and removed as required.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>SECTION 2</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>N/O</u>
INSPECTION AND MAINTENANCE (3.2.5)				
Traffic control zones are monitored to determine their effectiveness under varying conditions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Traffic control devices are inspected at the beginning and continuously during work shift.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Traffic control devices are restored to their proper position immediately and continuously.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Damaged, old, or ineffective devices are removed and replaced immediately and continuously.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Devices using reflected light for illumination are cleaned and monitored continuously.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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"/>

<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.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety devices are installed on automatic fastener feed tools as required.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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"/>

37.

SECTION 2 (continued)

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 placed 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.

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: _____

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 FORM

Root Cause Analysis Form

Root Cause Analysis (RCA)

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 Uncontrollable
--	---

RCA #	Solution(s): How to Prevent Loss From Occurring	RC ¹	CF ²	Corrective Action Lead	Due Date	Completion Date	Date Verified

¹ RC = Root Cause; ² CF = Contributing Factors (check which applies)

Investigation Team Members

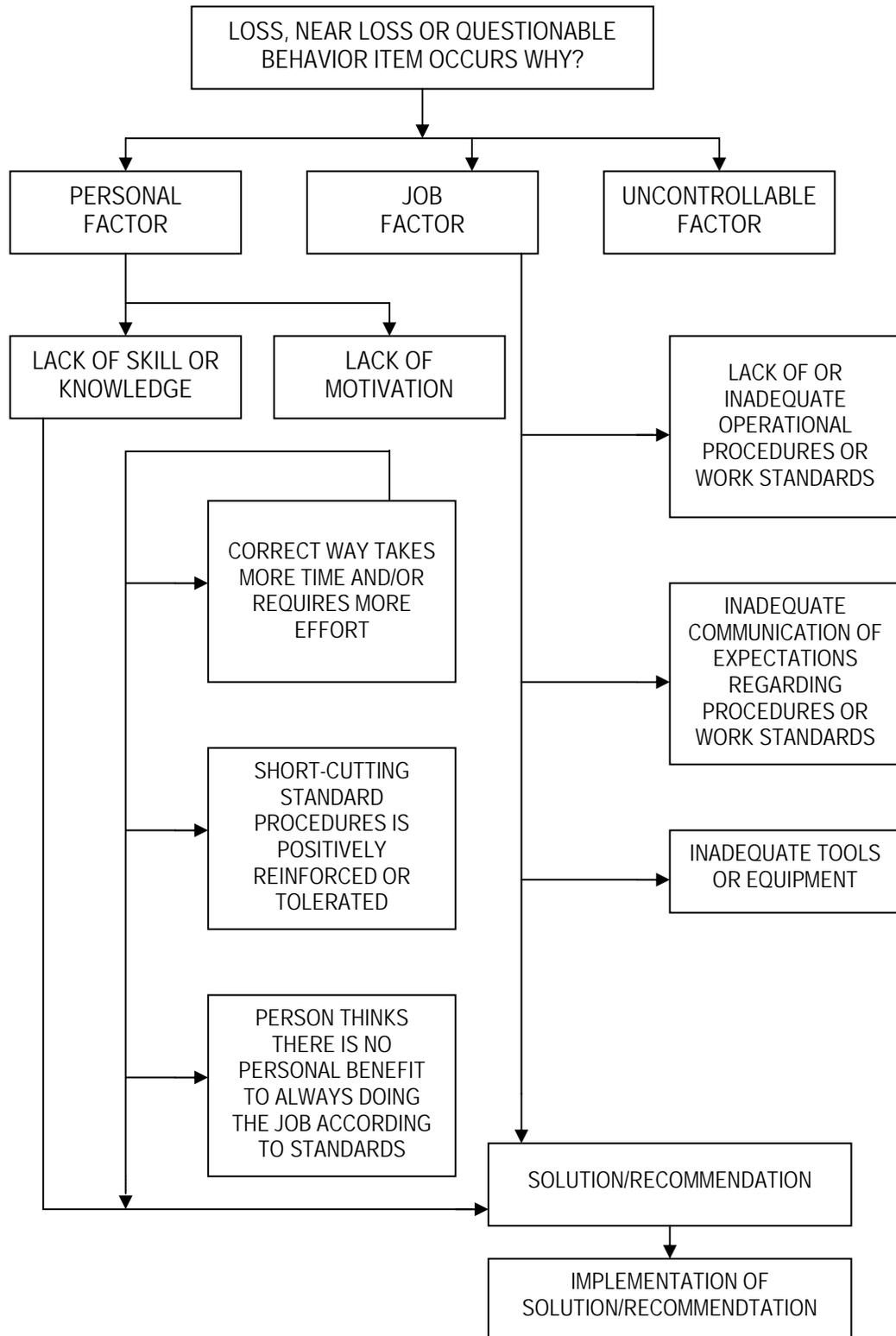
Name	Job Title	Date

Results of Solution Verification and Validation

Reviewed By

Name	Job Title	Date

Root Cause Analysis Flow Chart



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"/> Construction Mgmt- Haz Waste | <input type="checkbox"/> Facility Walk Through | <input type="checkbox"/> Process Safety Management |
| <input type="checkbox"/> Construction Mgmt - Non-Haz Waste | <input type="checkbox"/> General Office Work | <input type="checkbox"/> Tunneling |
| <input type="checkbox"/> Demolition | <input type="checkbox"/> Keyboard Work | <input type="checkbox"/> Welding |
| <input type="checkbox"/> Drilling-Haz Waste | <input type="checkbox"/> Laboratory | <input type="checkbox"/> Wetlands Survey |
| <input type="checkbox"/> Drilling-Non Haz Waste | <input type="checkbox"/> Lead Abatement | <input type="checkbox"/> Working from Heights |
| <input type="checkbox"/> Drum Handling | <input type="checkbox"/> Motor Vehicle Operation | <input type="checkbox"/> Working in Roadways |
| <input type="checkbox"/> Electrical Work | <input type="checkbox"/> Moving Heavy Object | <input type="checkbox"/> WWTP Operation |

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

- Allergic Reaction
- Amputation
- Asphyxia
- Bruise/Contusion/Abrasion
- Burn (Chemical)
- Burn/Scald (Heat)
- Cancer
- Carpal Tunnel
- Concussion
- Cut/Laceration
- Dermatitis
- Dislocation

- Electric Shock
- Foreign Body in eye
- Fracture
- Freezing/Frost Bite
- Headache
- Hearing Loss
- Heat Exhaustion
- Hernia
- Infection
- Irritation to eye
- Ligament Damage

- Multiple (Specify) _____
- Muscle Spasms
- Other (Specify) _____
- Poisoning (Systemic)
- Puncture
- Radiation Effects
- Strain/Sprain
- Tendonitis
- Wrist Pain

Part of Body Injured

- Abdomen
- Ankle(s)
- Arms (Multiple)
- Back
- Blood
- Body System
- Buttocks
- Chest/Ribs
- Ear(s)
- Elbow(s)
- Eye(s)
- Face
- Finger(s)
- Foot/Feet

- Hand(s)
- Head
- Hip(s)
- Kidney
- Knee(s)
- Leg(s)
- Liver
- Lower (arms)
- Lower (legs)
- Lung
- Mind

- Multiple (Specify) _____

- Neck
- Nervous System
- Nose
- Other (Specify) _____
- Reproductive System
- Shoulder(s)
- Throat
- Toe(s)
- Upper Arm(s)
- Upper Leg(s)
- Wrist(s)

Nature of Injury

- Absorption
- Bite/Sting/Scratch
- Cardio-Vascular/Respiratory System Failure
- Caught In or Between
- Fall (From Elevation)
- Fall (Same Level)
- Ingestion

- Inhalation
- Lifting
- Mental Stress
- Motor Vehicle Accident
- Multiple (Specify) _____

- Other (Specify) _____

- Overexertion
- Repeated Motion/Pressure
- Rubbed/Abraded
- Shock
- Struck Against
- Struck By
- Work Place Violence

Initial Diagnosis/Treatment Date: _____

Type of Treatment

- Admission to hospital/medical facility
- Application of bandages
- Cold/Heat Compression/Multiple Treatment
- Cold/Heat Compression/One Treatment
- First Degree Burn Treatment
- Heat Therapy/Multiple treatment
- Multiple (Specify) _____

- Heat Therapy/One Treatment
- Non-Prescriptive medicine
- None
- Observation
- Other (Specify) _____

- Prescription- Multiple dose

- Prescription- Single dose
- Removal of foreign bodies
- Skin Removal
- Soaking therapy- Multiple Treatment
- Soaking Therapy- One Treatment
- Stitches/Sutures
- Tetanus
- Treatment for infection
- Treatment of 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: _____

Attachment 7

**Applicable Material Safety Data Sheets
(available onsite)**

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
- Contractor Daily Production Report
- Contractor Daily Quality Control Report
- Preparatory Phase Report

Submittal Register

Contract Number: N62467-01-D-0331		CTO No.: 40			CTO Title: Remedial Action at Site 1586					Location: NAVSTA Mayport, Mayport, Florida			Contractor: CH2M HILL Constructors, Inc.			
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Spec Section	Item Description	Para. Number	Approving Authority	Other Reviewers	Submittal Number	Scheduled Submission Date	CCI Review Date	CCI Disposition	CCI Transmit Date	QC Admin Received Date	QC Disposition	QC Admin Transmit Date	Contracting Officer Received	Contracting Officer Disposition	Contracting Officer Return	Remarks
SD-04	Drawings															
	As-builts															
SD-07	Schedules															
	Project Schedule															
SD-09	Reports															
	Sampling and Analysis Plan															
	Quality Control Plan															
	Health and Safety Plan															
	Waste Management Plan															
	Environmental Protection Plan															
	Technical Memorandum															
	Environmental Conditions Report															
SD-12	Field Test Reports															
SD-13	Certificates															
	Analytical Lab Certification															
	Disposal Facility Permit															
	Transport Permit															
	Utility Excavation Permit															
	Well Driller Permit															
SD-14	Samples															
	IDW Samples (Water)															
	IDW Samples (Soil)															
SD-18	Records															
	Contaminated Soil Disposal Profile															
	Contaminated Soil Disposal Manifests															
	Contaminated Water Disposal Manifests															
	Contaminated Water Disposal Profile															
	List of Contractor Personnel															
	Contractor Production Reports															
	Contractor QC Reports															
	T & P Log															
	T & D Log															
SD-19																

Testing Plan and Log

CH2M HILL Constructors, Inc.

Contract Number:		CTO No.: 0040		CTO Title: Remedial Action at Site 1586				Location: NAVSTA Mayport, Mayport, Florida		
N62467-01-D-0331										
A	B	C	D	E	F	G	H	I	J	K
Spec Section and Paragraph	Test Required	Testing Lab	Sampled By	Date Collected	Test Location	Frequency	Date Tested	Date Reported	Results	Remarks
<i>LNAPL/Groundwater Elevation Measurements</i>										
Section 2.1.3	O/W Interface Probe	N/A			MPT-BE-MW01S	Once				
Section 2.1.3	O/W Interface Probe	N/A			MPT-BE-MW02S	Once				
Section 2.1.3	O/W Interface Probe	N/A			MPT-BE-MW04S	Once				
Section 2.1.3	O/W Interface Probe	N/A			MPT-BE-MW05S	Once				
Section 2.1.3	O/W Interface Probe	N/A			MPT-BE-MW06S	Once				
Section 2.1.3	O/W Interface Probe	N/A			MPT-BE-MW07S	Once				
Section 2.1.3	O/W Interface Probe	N/A			MPT-BE-MW09S	Once				
Section 2.1.3	O/W Interface Probe	N/A			MPT-BE-MW10S	Once				
Section 2.1.3	O/W Interface Probe	N/A			MPT-BE-MW11S	Once				
Section 2.1.3	O/W Interface Probe	N/A			MPT-1586-MW14S	Once				
Section 2.1.3	O/W Interface Probe	N/A			MPT-1586-MW15S	Once				
Section 2.1.3	O/W Interface Probe	N/A			MPT-1586-MW16S	Once				
Section 2.1.3	O/W Interface Probe	N/A			MPT-1586-MW17S	Once				
Section 2.1.3	O/W Interface Probe	N/A			MPT-BE-MW08I	Once				
<i>LNAPL Recovery Testing</i>										
Section 2.1.4	Pressure Transducer; Data Logger; Peristaltic Pump; O/W Interface Probe	N/A			MPT-BE-MW06S	Once				
Section 2.1.4	Pressure Transducer; Data Logger; Peristaltic Pump; O/W Interface Probe	N/A			MPT-1586-MW15S	Once				
Section 2.1.4	Pressure Transducer; Data Logger; Peristaltic Pump; O/W Interface Probe	N/A			MPT-1586-MW16S	Once				

Testing Plan and Log

CH2M HILL Constructors, Inc.

Contract Number:		CTO No.: 0040		CTO Title: Remedial Action at Site 1586				Location: NAVSTA Mayport, Mayport, Florida		
N62467-01-D-0331										
A	B	C	D	E	F	G	H	I	J	K
Spec Section and Paragraph	Test Required	Testing Lab	Sampled By	Date Collected	Test Location	Frequency	Date Tested	Date Reported	Results	Remarks
Section 2.1.4	Pressure Transducer; Data Logger; Peristaltic Pump; O/W Interface Probe	N/A			MPT-1586-MW17S	Once				
Analytical - Disposal Characterization										
Section 3.0	Liquid Disposal									See Table 3-2
Section 3.0	Solids Disposal									See Table 3-2



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

March 6, 2006

Mr. Jeff Marks
CH2M HILL Constructors, Inc.
6219 Authority Avenue
Jacksonville, Florida 32221

RE: Contract No. N62467-01-D-0331
Contract Task Order No. 0040
Naval Station (NS) Mayport - Mayport, Florida
Project Quality Control Manager Letter of Appointment

Dear Mr. Marks:

Herein describes the responsibilities and authority delegated to you in your capacity as the Project QC Manager at NS Mayport, Contract Task Order (CTO) 0040 under RAC Contract No. N62467-01-D-0331.

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 6.6.2.1 of 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.

A handwritten signature in black ink, appearing to read "Scott Smith".

Scott Smith
Program Manager

cc: Mike Halil/ATL
Theresa Rojas/ATL
Project File No. 334838

CH2M HILL SOUTH DIV RAC N62467-01-D-0331	CONTRACTOR QUALITY CONTROL REPORT (ATTACH ADDITIONAL SHEETS IF NECESSARY)	REPORT DATE: REVISION NO: REVISION DATE: REPORT NO:		
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 N62467-01-D-0331	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 N62467-01-D-0331	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	INSPECTION PERFORMED BY	NUMBER/ VOLUME/ WEIGHT	
EQUIPMENT USED ON JOB SITE TODAY.					
EQUIPMENT DESCRIPTION	EQUIPMENT MAKE/MODEL	SAFETY CHECK PERFORMED BY	NUMBER OF HOURS		
			USED	IDLE	REPAIR
CHANGED CONDITIONS/DELAY/CONFLICTS ENCOUNTERED (List any conflicts with the delivery order [i.e., scope of work and/or drawings], delays to the project attributable to site and weather conditions, etc.):					
VISITORS TO THE SITE:					
LIST OF ATTACHMENTS (OSHA report, confined space entry permit, incident reports, etc.):					
SAFETY REQUIREMENTS HAVE BEEN MET <input type="checkbox"/>					
_____ SUPERINTENDENT'S SIGNATURE			_____ DATE		

CH2M HILL SOUTH DIV RAC N62467-01-D-0331		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?					
MATERIAL STORAGE	ARE MATERIALS STORED PROPERLY? YES <input type="checkbox"/> NO <input type="checkbox"/>					
	IF NO, WHAT ACTION IS TAKEN?					
SPECIFICATIONS	REVIEW EACH PARAGRAPH OF SPECIFICATIONS.					
	DISCUSS PROCEDURE FOR ACCOMPLISHING THE WORK.					
	CLARIFY ANY DIFFERENCES.					
PRELIMINARY WORK & PERMITS	ENSURE PRELIMINARY WORK IS CORRECT AND PERMITS ARE ON FILE.					
	IF NO, WHAT ACTION IS TAKEN?					

CH2M HILL SOUTH DIV RAC N62467-01-D-0331	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