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Work Plan Addendum
Naval Construction Battalion Center
Gulfport, Mississippi

Revision No. 00

Contract No. N62467-98-D-0995
Contract Task Order No. 0008

Submitted to:

U.S. Naval Facilities Engineering Command Southern Division

Prepared by:

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Constructors, Inc.

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April 1999

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Prepared/Approved By:

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Client Acceptance:

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Acronym List

ACGIH	American Conference of Governmental Industrial Hygienists
ANSI	American National Standards Institute
APR	air purifying respirator
AROICC	Assistant Resident Officer in Charge of Construction
ASTM	American Society for Testing and Materials
BTEX	benzene, toluene, ethylbenzene, and xylene
NCBC	Naval Construction Battalion Center
CCI	CH2M HILL Constructors, Inc.
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CMP	Contract Management Plan
CMS	Contract Management System
COTR	Contracting Officer's Technical Representative
CPR	cardiopulmonary resuscitation
CRZ	Contamination Reduction Zone
CTO	Contract Task Order
DOT	Department of Transportation
DQO	data quality objective
EDB	ethylene dibromide
EMD	Environmental Management Division
EPA	U.S. Environmental Protection Agency
EZ	Exclusion Zone
FID	flame ionization detector
gpm	gallons per minute
HAPS	hazardous air pollutants
HAZCOM	hazard communication
HSP	Health and Safety Plan
lb	pound
IDLH	immediate danger to life or health
LEL	lower explosive limit
LEPC	Local Emergency Planning Committee
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
MDEQ	Mississippi Department of Environmental Quality
MSDS	Material Safety Data Sheet
msl	mean sea level
NAVFAC	Naval Facilities Engineering Command
NDG	nuclear density gauge
NIOSH	National Institute of Occupational Safety and Health
NSC	National Safety Council
NTR	Navy Technical Representative
O&M	operation and maintenance
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl
PID	photoionization detector

Acronym List (Continued)

PM	Project Manager
POL	petroleum, oils and lubricants
PPE	personal protective equipment
PQCM	Program Quality Control Manager
ppm	parts per million
psi	pounds per square inch
PVC	polyvinyl chloride
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
RMSF	Rocky Mountain Spotted Fever
ROICC	Resident Officer in Charge of Construction
ROPS	Rollover Project Structures
RPM	Remedial Project Manager
SHSS	Site Health and Safety Specialist
SVOC	semivolatile organic compound
SZ	Support Zone
TCLP	toxicity characteristic leaching procedure
TOX	total organic halogens
TPH	total petroleum hydrocarbons
TRPH	total recoverable petroleum hydrocarbons
TSDF	treatment, storage and disposal facility
TWA	Time Weighted Average
VOC	volatile organic compounds

SECTION 1

1.0 Introduction

CH2M HILL Constructors, Inc. (CCI) has been contracted by the Department of the Navy, Southern Division, Naval Facilities Engineering Command (Southern Division, NAVFAC), to prepare this Work Plan Addendum for work to be performed by CCI at Naval Construction Battalion Center (NCBC), Gulfport, Mississippi. The work is being performed under Contract No. N62467-98-D-0995 and in accordance with the management approach outlined in the CCI Contract Management Plan (CMP) dated July 1998.

The purpose of this Work Plan Addendum is to describe the generic efforts necessary to perform environmental remediation services at NCBC, Gulfport, Mississippi. Components of this work include the following:

- Diversion of the existing ditch water flow
- Excavation of PCB contaminated soils to various depths
- Demolition and replacement of the existing pedestrian footbridge (if necessary)
- Monitoring of excavation operations using PCB field screening kit analysis
- Collection and laboratory analysis of confirmation samples
- Placement of debris and soils into roll-off boxes maintained by the subcontractor
- Collection, storage, testing and off-site disposal of all soil, debris, and water that accumulates in the excavations
- Backfill and compaction of the excavated areas with subcontractor-provided off-site clean backfill material
- Site restoration

This Work Plan Addendum is organized into six sections of text and three appendices as follows:

Section 1.0 includes the site history, the required scope of work, and the project schedule for these sites. The Basewide Work Plan provides a brief description of the reporting requirements under the Contract.

Section 2.0 Sampling and Analysis Plan (SAP) provides the project sample locations, sample collection frequency, and the required laboratory analyses for samples collected during project activities. The Basewide Work Plan outlines the sample collection methodology including sample handling, labeling, and required collection of quality assurance and quality control samples.

Section 3.0 Wastestream Management Plan of the Basewide Work Plan discusses characterization, disposal, handling, and transportation of wastes encountered or generated during the work completed at NCBC Gulfport.

Section 4.0 Environmental Protection Plan of the Basewide Work Plan addresses the Environmental Protection Plan.

Section 5.0 Site Health and Safety Plan (HSP) addresses project specific health and safety issues for the construction activities to be completed at NCBC Gulfport. The complete plan is provided in Appendix C.

Section 6.0 Quality Control Plan. The submittal register included in this section of the Work Plan Addendum presents the project-related submittals and their projected submittal date. The site-specific project organization for this Contract Task Order (CTO) is also included in this Work Plan Addendum. The following support documents are presented as appendices to this Work Plan Addendum.

- Appendix A PCB Investigation Report
- Appendix B Project Schedule
- Appendix C Health and Safety Plan

1.1 Site History and Objectives

The surface and subsurface soils have previously been analyzed by others. Please see the attached PCB Investigation Report (by ABB Environmental Services, Inc., dated October 5, 1997) for this information.

The objectives of the remedial activities to be performed by CCI adjacent to the Parade Field at NCBC Gulfport include the excavation of PCB contaminated soils and subsequent backfill with clean off-site soil.

1.2 Scope of Work

1.2.1 Mobilization and Setup of Temporary Facilities

This task will consist of the mobilization of personnel, equipment, subcontractors, and materials to NCBC Gulfport and the establishment of temporary facilities to conduct the remedial activities. At least 10 days prior to conducting any field activities, the Mississippi Department of Environmental Quality (MDEQ) must be notified. It is assumed that this notification will be performed by the Navy. For work to be performed under this CTO, it is anticipated that the Navy will provide office space and utilities for this office. In addition to all field activities being coordinated from this office location, office supplies, field equipment, and personal protective equipment (PPE) will also be stored in the office.

CCI will review all Navy rules, regulations, and standard operating procedures regarding vehicle movement and control inside the base.

1.2.2 Contaminated Material Remediation Activities

1.2.2.1 Soil Excavation General Requirements

The surface and subsurface soils have previously been analyzed by others. Please see the attached PCB Investigation Report (by ABB Environmental Services, Inc., dated October 5, 1997) for this information.

Prior to the commencement of any excavation, site controls including construction barricades and roadway signs if necessary, will be installed. Security fencing will also be installed at the site if necessary. The excavation area at the work site will be marked with paint and stakes, as appropriate, and an underground utility survey will be conducted by contacting the appropriate personnel at NCBC. If necessary, CCI will coordinate with the Resident Officer in Charge of Construction (ROICC) to acquire utility layout plans of the area. Utilities that traverse the excavation area will be physically verified by the locating service. All marked utility lines in the excavation area will be uncovered with hand tools. In addition, the progress of excavation conducted with machinery will be continuously monitored for evidence of subsurface obstructions. CCI assumes that surficial debris removed during the work can be transported and disposed as construction debris at a local landfill approved to accept this debris.

Once the proposed limits of soil excavation are reached, confirmation soil samples will be collected. This activity will be accomplished in a maximum of four repetitions. The results of the analyses will be used to direct additional excavation activities and the collection of additional confirmation soil samples, if necessary. The ROICC and the Project Manager will be notified if the limits of excavation will vary substantially from the proposed limits of soil excavation.

Erosion control measures will be implemented if soil is stockpiled or an excavation remains open overnight. These measures, if required, will be installed as outlined in Section 4.0 Environmental Protection Plan of the Basewide Work Plan. An Erosion and Sediment Control Plan, also provided in the Basewide Work Plan, outlines the procedures to be implemented at the site to prevent sediment migration and erosion. Plastic sheeting, silt fences, and hay bales will be available on site should weather conditions warrant covering and berming stockpiled material to control runoff or dust emissions.

1.2.2.2 Drainage Ditch Water Flow Diversion

Prior to the initiation of remediation activities, CCI will divert the ditch water flow around the area to be excavated. The system will be comprised of diversion/cut-off walls at each end of the affected ditch and a means of conveying upstream flow past the excavation and back into the ditch. The system will be capable of handling the maximum anticipated flow rate of the ditch during the period the diversion system will be in place.

1.2.2.3 Drainage Ditch Excavation

After the limits of the initial excavation have been established by CCI, removal activities will begin on the contaminated soils at the ditch adjacent to the Parade Field between the Dispensary and Building 130. The CLEAN Contractor has sampled and analyzed

the soils at and below the ground surface in the ditch area. All laboratory analysis generated during these other activities is included in the PCB Investigation Report provided in Appendix A. The estimated areal extent of the area to be excavated averages approximately 100 feet long by 10 feet wide by 1.5 feet deep, and within this footprint an area approximately 40 feet long by 10 feet wide by an additional 1.5 feet deep (for a total depth of 3 feet.) However, depths up to 4 feet and widths up to the length of the pedestrian footbridge may be encountered.

Representative soil samples will be collected during the excavation. These soil samples shall be field analyzed utilizing immunoassay screening kits specifically designed for polychlorinated biphenyl (PCB) detection in accordance with U.S. Environmental Protection Agency (EPA) Method SW9078. The kits will have a detection limit of no greater than 2 ppm. The field screening results will be used in conjunction with visual observations to determine the preliminary limits of the excavation. Upon indication from the field screening kit test results that the clean-up criteria has been met, CCI shall collect, properly containerize and laboratory analyze the confirmation samples (see Section 2.0 Sampling and Analysis Plan). Upon completion of the initial excavation, berms will be placed around the perimeter to reduce the quantity of rainfall entering the excavation.

The existing pedestrian footbridge will be removed only if undermining of the foundation support is required to remove all contaminated soil. Regardless of the eventual status of the footbridge, excavation underneath it may be required.

The excavated soil from the ditch will be disposed of at the Chemical Waste Management landfill in Emelle, Alabama. The pedestrian foot bridge and any other demolition debris will be disposed of at a construction debris or sanitary landfill.

Upon review of the confirmatory analytical results, excavation operations may continue or backfill operations will begin. (Assume that this will occur within 7 work days of CCI receiving written laboratory test results of the confirmation samples.) Upon completion of excavation operations, the contaminated soil excavation shall be backfilled with suitable offsite fill material. The backfill shall be machine compacted in maximum 1-foot thick lifts to 95 percent standard proctor density in accordance with ASTM D-698.

1.2.3 Pedestrian Footbridge

Should excavation of the contaminated soils undermine and compromise the structural integrity of the existing pedestrian footbridge, it will be removed and replaced. CCI will either demolish the footbridge and dispose of the debris off-site in a legal manner, or lift the footbridge out of the way (if possible) and reinstall it at the completion of remediation operations. If the footbridge is demolished, a new one will be installed at the completion of remediation operations. The new footbridge will be of the same dimensions and similar construction as the existing one.

1.2.4 Water in Excavations

All contact water that accumulates in the excavations during the work will be collected. Pumps, hoses and other equipment to remove the water from the excavations and suitable containers for storage of the collected water will be available on-site. The

collected water shall be stored in a properly bermed, secure storage area at a location to be determined by the facility. The water will be analyzed in accordance with Section 2.2.1.2.

1.2.5 Stockpiling of Collected Materials

CCI shall stockpile all collected material (contaminated and non-contaminated) in on-site stockpiles/storage areas until it is either disposed of off-site or reused as backfill. Contaminated materials from the ditch excavation shall be placed in covered roll-off boxes. Non-contaminated materials shall be placed in a bermed stockpile area protected from rainfall and surface water run-on. The stockpiled materials shall be covered during inclement weather and non-work hours. Sandbags or other suitable materials shall be used to secure the cover. The stockpile areas will be maintained, including replacement of any worn or damaged cover/berm material. CCI shall perform inspections as necessary, at minimum on a weekly basis.

1.2.6 Laboratory Analysis of Contaminated Soil and Debris

1.2.6.1 Excavation Confirmation Samples

Upon indication from field screening test kit analysis that the clean-up criteria of 1 parts per million (ppm) has been achieved, CCI shall perform excavation confirmation sampling and analysis in accordance with the requirements of *Verification of PCB Spill Clean-up by Sampling and Analysis,* Office of Toxic Substances, EPA. Each sample shall be analyzed at a Navy approved laboratory following EPA SW846 procedures. The analysis shall include PCBs (EPA Method 8082). All analysis shall be performed by a Navy approved laboratory and shall include data quality objective (DQO) Level III Quality Assurance (QA)/Quality Control (QC).

1.2.6.2 Contaminated Soil and Debris Analysis

Upon completion of contaminated soil excavation and stockpiling operations, CCI shall collect a representative sample of the contaminated soil and debris. Each sample shall be analyzed at a Navy approved laboratory following EPA SW846 procedures. The analysis shall include Toxicity Characteristic Leaching Procedure (TCLP) extraction using EPA method 1311. The extracted fluid shall then be analyzed for volatile organic compounds (VOCs) (EPA Method 8260B), semivolatile organic compound (SVOCs) (EPA Method 8270), pesticides/herbicides (EPA Methods 8081A/8151), and eight RCRA Metals (EPA Methods 6010/7010). In addition, totals for Cyanide (EPA Methods 9010/9012)and PCBs (EPA Method 8082) shall be analyzed. All analysis shall include DQO Level III QA/QC and shall be performed on a 7-day turn around time basis.

1.2.7 Laboratory Analysis of Contents and Excavation Contact Water

Upon completion of contaminated soil excavation, and when stockpiling operations and backfill operations have begun, CCI shall collect a representative sample of any excavation contact water from the excavation. Each sample shall be analyzed at a Navy approved laboratory following EPA SW846 procedures. Analysis shall include TCLP extraction using EPA Method 1311 (for solids). The extracted fluid shall then be analyzed for VOCs (EPA Method 8260B), SVOCs (EPA Method 8270), 8 RCRA Metals (EPA Methods 6010/7010) and pesticides/herbicides (EPA Methods 8081A/8151). In

addition, totals for Cyanide (EPA Methods 9010/9012) and PCBs (EPA Method 8082) shall be analyzed. All analysis shall include DQO Level III QA/QC and will be performed on a 7-day turnaround time basis.

1.2.8 Backfill

All required clean backfill must come from an off-site source. The backfill material shall be capable of supporting vegetative growth. Appropriate laboratory analytical results are required to demonstrate that the off-site material is free from contamination, prior to any being delivered to the site. Backfill shall be machine compacted to achieve a relative compaction of 95 percent of standard proctor density per ASTM D698. Field testing to confirm compaction shall be performed at a frequency of one test per 500 square feet of backfill. Testing shall be performed by a qualified geophysical testing laboratory.

1.2.9 Site Restoration

Upon completion of backfill operations, the site will be restored to its previous condition. The ditch water flow diversion system shall be removed in its entirety and the impacted ditch bottom restored to its original condition. The site will be graded to provide positive drainage, sodded and fertilized with landscape grasses commonly used in the area, and then thoroughly watered. All other areas, structures or utilities affected by operations shall be replaced or repaired.

1.2.10 Decontamination and Demobilization

Personnel and equipment will be decontaminated prior to leaving the site. Equipment shall be properly decontaminated to remove any contamination adhering to the equipment components as a result of the remediation activities. All debris and rinsate generated by the treatment activities shall be properly containerized and removed from the site and properly and legally disposed. Decontamination of personnel and personal protective equipment shall be performed in accordance with the HSP and applicable provisions of 29 CFR 1910.120.

1.3 Project Schedule

The anticipated schedule is included in Appendix B.

1.4 Communications Plan

A communication matrix outlining the lines of communication for the Southern Division and CCI personnel is presented in Table 1-1. Table 1-2 provides a project personnel directory.

TABLE 1-1
Communications Matrix

CCI Position	Navy Direct Report
Executive Sponsor Ray Tyler	Contracting Officer Bob Meddick
Program Manager Russ Boyd	ACO, Ken Lott COTR, Jimmy Jones
Senior Project Manager Flip Altman	COTR, Jimmy Jones ACO, Richard Stanley
CTO Project Manager Charlie Radford	RPM, Art Conrad

TABLE 1-2
Project Personnel Directory

Contact	Company
Mr. Russ Boyd Mr. Flip Altman Mr. Ken Fortner Mr. Bob Nash Ms. Marsha Robinson Mr. Charlie Radford	CH2M HILL Constructors, Inc. 115 Perimeter Center Place, N.E. Suite 700 Atlanta, GA 30346-1278 770/604-9095
Mr. Bob Meddick	Southern Division Naval Facilities Engineering Command P.O. Box 190010 North Charleston, SC 29419-9010 843/820-5623
Mr. Richard Stanley	Southern Division Naval Facilities Engineering Command P.O. Box 190010 North Charleston, SC 29419-9010 843/820-5916
Mr. Jimmy Jones	Southern Division Naval Facilities Engineering Command P.O. Box 190010 North Charleston, SC 29419-9010 843/820-5544
Mr. Art Conrad	Southern Division Naval Facilities Engineering Command P.O. Box 190010 North Charleston, SC 29419-9010 843/820-5577
Mr. Gordon Crane	Naval Construction Battalion Center 5200 CBC 2nd Street Gulfport, MS 39501

1.5 Traffic Control Plan

Traffic control will be the responsibility of the CCI Site Superintendent. The facility will remain operational during excavation and backfilling activities. CCI will minimize

disturbance to any operations during project activities. CCI will consult with on-site Navy personnel to evaluate excavation area access, placement of equipment, and traffic flow to minimize the impact of this work to base operations. Further, CCI will review all Navy regulations and standard operating procedures regarding vehicle movement and control inside the base.

Prior to the commencement of excavation activities and as needed, traffic barricades, signs, and road guards will be placed to prohibit traffic around the excavation area. Road signs will be placed to warn traffic entering and leaving the facility property of the ongoing construction activities.

SECTION 2

2.0 Sampling and Analysis Plan

2.1 Purpose and Scope

This site-specific Sampling and Analysis Plan (SAP) outlines the required testing of environmental media, including construction materials, during the execution of each project at NCBC Gulfport. This SAP provides information on the sample collection frequency, required analyses, and methodology for waste characterization and incidental samples collected during the construction phase of each project; sample QA/QC procedures to be maintained during all sample collection activities; and decontamination procedures. The SAP also outlines the required sample locations, frequency, and analyses required for this project.

The various types of environmental samples collected during the execution of each project may include confirmation samples, waste characterization samples, remediation system samples, groundwater monitoring well samples, and incidental wastestream samples. Confirmation samples (a.k.a. verification samples) are collected and analyzed to evaluate the limits of a soil excavation. Waste characterization samples are collected and analyzed to evaluate the required management, transportation, and disposal requirements for any wastestream generated during a project. Incidental wastestream samples are collected and analyzed to properly characterize management, transportation, and disposal requirements for any incidental wastestream, such as decontamination water, generated during project construction or operation and maintenance activities.

2.2 Chemical Sampling Methodologies and Analytical Requirements

2.2.1 Waste Characterization and Incidental Waste Samples

2.2.1.1 Soil

Representative soil samples will be collected during the excavation. These soil samples will be field analyzed utilizing Immunoassay screening kits specifically designed for PCB detection in accordance with EPA Method SW9078. The kits shall have a detection limit of no greater than 2 ppm. The field screening results will be used in conjunction with visual observations to determine the preliminary limits of the excavation. Upon indication from the field screening kit test results that the clean-up criteria has been met, CCI shall collect, properly containerize and laboratory analyze the confirmation samples.

Upon indication from field screening test kit analysis that the clean-up criteria has been achieved, CCI shall perform excavation confirmation sampling and analysis in accordance with the requirements of *Verification of PCB Spill Clean-up by Sampling and Analysis* by the Office of Toxic Substances, EPA. The clean-up criteria to be achieved is

1 ppm. Each sample shall be analyzed at a Navy approved laboratory following EPA SW846 procedures. The analysis shall include PCBs (EPA Method 8082). All analysis shall be performed by a Navy approved laboratory and shall include data quality level (DQO) Level III QA/QC.

Upon completion of contaminated soil excavation and stockpiling operations, CCI shall collect a representative sample of the contaminated soil and debris. Each sample shall be analyzed at a Navy approved laboratory following EPA SW846 procedures. The analysis shall include TCLP extraction using EPA Method 1311. The extracted fluid shall then be analyzed for VOCs (EPA Method 8260B), SVOCs (EPA Method 8270), pesticides/herbicides (EPA Methods 8081A/8151), and eight RCRA Metals (EPA Methods 6010/7010). In addition, totals for Cyanide (EPA Methods 9010/9012)and PCBs (EPA Method 8082) shall be analyzed. All analysis shall include DQO Level III QA/QC, and analysis shall be performed on a 7-day turnaround time basis.

2.2.1.2 Water

Water generated from dewatering of excavations, and any accumulated decontamination water will be containerized, sampled, and delivered to a Navy approved laboratory following EPA SW846 procedures. Analytical requirements are based on the source of the contamination. At NCBC Gulfport, PCBs are the primary contaminants.

Analysis shall include TCLP extraction using EPA method 1311 (for solids). The extracted fluid shall then be analyzed for VOC's (EPA method 8260B), SVOC's (EPA Method 8270), 8 RCRA Metals (EPA method 6010/7010) and pesticides/herbicides (EPA Methods 8081A/8151). In addition, totals for Cyanide (EPA Method 9010/9012) and PCB's (EPA Method 8082) shall be analyzed. All analysis shall include DQO Level III QA/QC.

The following sample collection protocol will be observed when collecting water samples from a temporary containment vessel (i.e., frac tank) for volatile organic analyses and, if required, non-volatile organic or inorganic analyses. The water sample will be collected using a decontaminated or dedicated Teflon bailer.

- ***Volatile Organic Analyses*** - The following steps must be followed when collecting water samples for volatile organic analyses:

    1. Slowly pour from the top of the decontaminated Teflon bailer and completely fill the preserved 40-millileter (ml) vials. Cap each 40-ml vial. Dislodge all air bubbles from the cap before sealing the vial.
    2. Turn the capped vial upside-down and check for air bubbles. Tap the bottom of the vials to check for any bubbles that may have formed around the cap or sides. Discard and re-sample if bubbles are observed.
    3. Wipe the outside of sample vials with a Kimwipe or clean paper towel.
    4. Place sample vial(s) in a zip-top plastic bag and seal the bag.
    5. Immediately pack all samples into a cooler containing ice.

- ***Non-volatile Organic or Inorganic Analyses*** - It is assumed the sample containers, supplied by the Navy approved laboratory, contain the required preservative. The

following steps must be followed when collecting water samples for non-volatile organic or inorganic analysis:

1. Slowly pour from the top of the decontaminated Teflon bailer and fill the sample containers to approximately 90 percent capacity.
2. Cap the sample containers and wipe the outer surfaces of the sample containers clean with a Kimwipe or clean paper towel.
3. Place sample container(s) in individual zip-top plastic bags, if possible, and seal the bags.
4. Water level/sample level may be marked on container to determine whether or not liquid is lost during storage and shipping.
   Note: Marking of 40-ml vials is not necessary.
5. Immediately pack all samples into a cooler containing ice.

2.2.2 Sample Equipment Decontamination

Decontamination of field equipment is necessary to support the quality of samples by preventing cross contamination. Further, decontamination reduces health hazards and prevents the spread of contaminants off-site. All reusable equipment (non-dedicated) used to collect, handle, or measure samples will be decontaminated before coming into contact with any sample. Decontamination of equipment will occur at the sampling location(s). The sample location will include a bucket in which sampling equipment can be cleaned. Decontamination water will be transferred into 55-gallon drums or a frac tank for storage.

All items that contact contaminated media will be decontaminated before use and between sample locations if dedicated sampling equipment is not used. If decontaminated items are not immediately used, they will be covered either with plastic or aluminum foil depending on the size of the item. General guidelines for all decontamination procedures for the equipment being used are as follows:

- Potable water will be of a known quality. Water from untested sources that may contain contaminants will not be used.
- Soap used in the soap and water rinse step will be a low phosphate detergent.
- Sampling equipment that has come into contact with oil and grease will be cleaned with methanol or other approved alternative to remove the oily material. This may be followed by a hexane rinse and another methanol rinse.
- Decontaminated equipment will be allowed to air dry before being used.
- All cleaning procedures will be documented in a bound field book.
- Gloves, boots, safety glasses, and any other personal protective clothing and equipment will be used as specified in the site-specific health and safety plan.

2.2.3 Air Monitoring Measurement Procedures

The direct measurement of organic vapors using a PID is a required step during any subsurface excavation or drilling activities. The following outlines the procedures for direct measurement of organic vapors using the PID:

- Connect the measurement probe to the instrument and make the necessary operational checks (e.g., battery check, etc.) as outlined in the manufacturer's manual.
- Calibrate the instrument according to the manufacturer's manual.
- Verify that the instrument is reading zero and that all function and range switches are set appropriately.
- Insert the end of the probe directly into the atmosphere to be measured (e.g., breathing zone, monitoring well casing, split spoon, mason jar, etc.), and read the organic vapor concentration in ppm from the instrument display. Record the highest instrument response.
- Immediately document the reading in the field logbook, or on the appropriate field form.

2.2.4 Sample Handling

Handling of sample containers upon completion of sample collection activities will be minimized. Sample containers will be placed in plastic bags prior to their placement in the shipping containers. Packing will be provided between containers to avoid breakage. A chain-of-custody, documenting the sample identifications, the number of samples, and the required analyses, will accompany the shipping containers. If shipped by common carrier, the chain of custody will be placed in a sealed plastic bag taped to the inside of the shipping containers. Shipping containers will be sealed with strapping tape to avoid tampering during transport to the laboratory.

Special handling procedures must be used for samples requiring an environment maintained at 4 degrees Celsius (i.e., samples to be analyzed for VOCs, semi-volatiles, benzene, toluene, ethylbenzene, and xylene [BTEX], and/or total petroleum hydrocarbons [TPH]). Shipping containers will be insulated coolers packed with wet ice. Wet ice substitutes such as dry ice, blue ice, or chemical cooling packs will not be used. Environmental samples collected from a petroleum, oils and lubricants (POL) source will be considered non-hazardous substances and will be delivered to an approved laboratory within 24 hours of packaging, by a commercial carrier such as Federal Express.

2.2.5 Analytical Methods

Analytical testing will be completed in accordance with the site-specific requirements provided in the project specifications. If required, analytical methods and sample collection frequency for confirmation samples, treatment system samples, and well samples will be provided in the site-specific work plan addenda. Analytical methods for waste characterization samples and incidental wastestream samples are provided in Section 2.2.1 Waste Characterization and Incidental Waste Samples. Modifications to the analytical methods for waste characterization samples and incidental wastestream samples will be provided in the site-specific work plan addenda. The addenda will provide, in tabular format, the required sample collection locations, frequency, and analytical methods.

2.2.6 Field Sampling Quality Control

Field quality control will include collection of QC samples. QC samples will be collected and analyzed for the identical parameters, using the same method, as the samples collected during the same sampling event. All QC samples will be collected, handled, and documented in the same manner as samples collected during the sampling event. QC samples will be collected for each sampling event including water sampling, solid sampling, and combined water/solid sampling. QC samples will include the following:

- *Trip Blanks* - Trip blanks will be required only for VOC samples. The trip blanks will be prepared in advance by the laboratory providing the sample containers. Each trip blank will include one set of VOC vials filled with analyte-free water. The trip blanks will be placed in the same transport container as empty VOC vials and be returned to the laboratory in the same shipping container as VOC samples. A trip blank will be submitted for each cooler that transports ten or more empty or full VOC vials. The trip blanks remain unopened for the entire sampling episode.

- *Pre-Cleaned Equipment Blanks* - Blanks will be collected on equipment that is brought to the site pre-cleaned and ready for use. Pre-cleaned equipment will include disposable sampling equipment (i.e., disposable Teflon bailers, etc.). These blanks will be collected from the sampling equipment immediately prior to sampling by rinsing the sampling equipment with analyte-free water and collecting rinsate in the appropriate sample containers.

- *Field-Cleaned Equipment Blanks* - In the event that field decontamination of sampling equipment is necessary, blanks will be collected on equipment that has been decontaminated in the field. These blanks will be collected after the equipment is decontaminated by rinsing the sampling equipment with analyte-free water and collecting rinsate in the appropriate sample containers.

- *Field Duplicates* - Duplicate samples will be collected and analyzed for the identical parameters, using the same method as the samples collected during the sampling event when five or more samples are taken (in accordance with established EPA methods in their *Standard Operating Procedures and Quality Assurance Manual*, EPA, Environmental Compliance Branch, Athens, Georgia, February 1, 1991). The duplicates will be collected using the same sample acquisition technique used to collect samples of the same environmental media (i.e., soil, water) for the same laboratory analyses (i.e., EPA Method 602, EPA Methods 5030 and 3550, etc.).

Quality control of field measurements will include calibration of all field sampling equipment at the start of each sampling day in accordance with equipment manufacturers' recommendations.

2.2.7 Sample Identification

All sample containers will be labeled in advance of sampling activities. The sample label will include a specific sample identification. The sample label will also include the date and time the sample was collected, the name or initials of the sampler, and the sample location. The label will also identify the container preservative, if any, as prepared by the laboratory.

The sample identification procedure will be implemented for the following types of environmental samples collected at NCBC Gulfport.

- Waste Characterization Samples and Incidental Wastestream Samples

  CTO Number-Location-Environmental Media-Month and Date-Year
Environmental Media: S (Soil), SL (Sludge), SW (Surface Water), GW (Groundwater), WW (Wastewater), and A (Air)
Month and Date: Four digit number representing the month and date (e.g., 0402 is April 2)
Year: Last two digits of the calendar year (e.g., 98 is the calendar year 1998)

- Confirmation Samples

  CTO Number-Location-Environmental Media-Month and Date-Year

2.2.8 Sample Custody and Handling

A chain-of-custody record will be completed for each sampling event and will accompany the samples during shipment. The chain-of-custody record, typically completed on a carbon copy form provided by the laboratory, documents the site-specific sample information required by the laboratory. The record will, at a minimum, contain the following:

- Site name and address
- Full name of sampler
- Sample identification number or label for each sample
- Collection date and time for each sample
- Sample matrix (liquid, solid, gas)
- Number of containers for each sample
- Sample location description for each sample
- Required analyses for each sample
- Preservation for each sample
- Confirmation indicating samples were shipped on ice
- Documentation if sample(s) is expected to be highly contaminated
- Signature of person(s) involved in chain of possession
- Transfer date(s) and time(s) in chain of possession

Personnel preparing the chain-of-custody form (i.e., sampler) will retain a copy of the form and attach it to the project's daily field logs.

If the samples are shipped by common carrier, the chain-of-custody form will be placed in a sealed plastic bag inside the shipping container. Prior to shipment, the shipping container will be secured with strapping tape and a custody seal. Thus, in the case of using a common carrier for shipment, two signatures will be required on the final chain-of-custody: one signature by the sample technician who prepared the form and one signature of the sample custodian assigned by the laboratory. The sample custodian assigned by the laboratory will open the shipping container and will document on the chain-of-custody form any shipping container custody seal breaks and/or shipping container or sample container(s) damage.

2.2.9 Field Documentation

A Field Activity Daily Log form will be completed for each day of sampling. This daily log form will be completed using waterproof ink and will be placed in a dedicated on-site binder at the completion of each sampling day. Individual sheets in the dedicated binder will be signed/initialed, dated, and sequentially numbered. The dedicated binder of daily logs will be placed in the project file at the completion of each sampling event. The daily log will index and will have attached all other paperwork generated during the sampling event including well purge logs, equipment calibration sheets, sampling analysis request forms, chain-of-custody forms, and shipping receipts.

A single responsible party will be designated for field documentation whenever feasible. For multi-person sampling teams, the party responsible for documentation will be focused on the field documentation effort such as the daily log and other related forms and will not be directly involved in the sample collection activities. The field documentation will include sufficient detailed information so that the history of each sample can be retained when necessary without the assistance of the sample collection personnel. Data will typically include a detailed description of equipment decontamination procedures, equipment calibration procedures, preparatory purging at each sample location, inventory of all generated wastes, and disposition of all generated wastes. A copy of the daily log, including all attachments, will be attached to the Daily Production Report.

2.2.10 Laboratory Requirements

2.2.10.1 Sample and Shipping Containers

Sample containers required to complete the analyses will be provided by the approved laboratory. The laboratory will be responsible for supplying the appropriate sample preservatives. The laboratory will also provide shipping containers and custody seals for each shipping container. By evaluating the size of the sample volume, the laboratory will supply the required shipping container(s).

2.2.10.2 Laboratory QA/QC

An acceptable substitute for Navy approval according to NEESA 20.2-047B will be current certification and participation in the EPA Contract Laboratory Program (CLP) or certification by the U.S. Army Corps of Engineers for environmental work. Evidence of the appropriate certification(s) will be provided by the laboratory prior to any analytical work.

The selected laboratory's data validation and quality analysis procedures will conform to EPA and MDEQ laboratory certification QA/QC requirements. These stringent requirements provide written procedures for laboratory methodologies, equipment, and quality analyses. Each certified laboratory is inspected on an annual basis to verify laboratory operations are being conducted in conformance with certification requirements.

QC tests such as method blanks and matrix spikes will be completed at frequencies established by the test method or the laboratory QA/QC program, whichever is more

stringent. The results of the QC tests, completed by the laboratory concurrent with the required sample analysis, will be reported with the sample results.

2.2.10.3 Laboratory Management of Samples

The laboratory will assign a sample custodian to receive samples. The sample custodian will open the shipping container(s) and denote any damage to the shipping container or sample containers on the chain-of-custody form for the samples. Upon receipt of a sample, the custodian will inspect the condition of each sample and document any discrepancies between information presented on the sample label and the chain-of-custody record. The custodian will assign a laboratory number to each sample, record the sample in the laboratory logbook, and store the sample in a secured storage room or cabinet until assigned to an analyst for analysis. Each sample will be stored in the appropriate conditions, such as four degrees Celsius, if required, and for maximum holding times identified by 40 Code of Federal Regulations (CFR) 136, EPA *Guidelines Establishing Test Procedures For The Analysis Of Pollutants*.

The custodian will immediately contact the person who completed the chain-of-custody in the event any shipping container seal is broken, any discrepancies between the chain-of-custody and sample labels are noted, or any sample container is damaged. Any problem(s) documented by the sample custodian will be resolved with the sample collection personnel before the sample is assigned for analysis.

2.2.10.4 Sample Disposal

The laboratory will dispose all samples in accordance with all applicable federal, state, and local environmental regulations. Prior to off-site transportation of samples, the laboratory will be responsible for evaluating the classification of each sample in accordance with the environmental regulations established in 40 CFR 260 and 261. If a sample is deemed a hazardous waste by the laboratory, the sample and sample container will be disposed or treated at a facility permitted in accordance with the requirements outlined 40 CFR 264. If a sample is deemed a non-hazardous waste by the laboratory, the sample and sample container will be disposed or treated at a facility permitted in accordance with 40 CFR 257.

2.2.10.5 Laboratory Equipment Decontamination

The selected laboratory will decontaminate equipment in accordance with the approved procedures established in their QA/QC program that served as the basis of their certification.

2.2.11 References and Miscellaneous Procedures

Procedures for chemical sampling and analyses have been developed to comply with standard industry practices. For issues or circumstances not covered in Section 2.0 Sampling and Analysis Plan, standard practices will be implemented based upon guidance provided in the following referenced documents used to develop the methodologies provided in the guidance of EPA as established in their *Standard Operating Procedures and Quality Assurance Manual* (EPA, Environmental Compliance Branch, Athens, Georgia, February 1, 1991).

2.3 Construction Materials Sampling Methodologies and Field Testing

2.3.1 Concrete

Sampling and testing of concrete will be in accordance with required procedures outlined in the project's technical specifications. The technical specifications will typically cross-reference procedures to specific American Society for Testing and Materials (ASTM) standards. Testing will be completed by a testing laboratory certified by Florida for concrete testing. Laboratory certification will be required prior to concrete placement. Field sampling and testing will be performed by technicians trained in concrete sampling and testing procedures.

If the placement of concrete is required, the following guidelines for sampling and testing will be maintained:

- Concrete will have a 28-day compressive strength of 3000 pounds per square inch (psi) and will be sampled during placement. Slump will be between 2 and 4 inches in accordance with ASTM C 143. Air content will be tested using ASTM C 33 aggregate Size No. 57 to verify 4 to 6 percent air entrainment for concrete exposed to freeze-thaw conditions. Cylinders will be taken for compressive strength testing. They will be broken on days 7 and 28 to verify the concrete is 3000 psi. A copy of the test results for the mix design will be attached to the Daily Production Report for the initial day of use of each concrete supply.

- The time of arrival on-site for each load of concrete will be documented. Loads will be placed within 2 hours of arrival on-site. Any load, or portion of a load, on-site in excess of this allowed holding time will be rejected and not used on-site.

- Field tests for temperature, slump by cone method, using ASTM C 143, and entrained air by pressure method, using ASTM Method C231, will be completed for each load of concrete delivered to the site prior to placement of the load. Any load of concrete not meeting specified criteria will be rejected for use at the site. Material may be reworked on-site (e.g., additional water, mixing, etc.) to meet specified criteria subject to the limits of the previously identified holding time.

- Three concrete cylinders will be collected in accordance with ASTM C 172 for every 40 cubic yards of concrete placed with a minimum of one set of cylinders collected for each day of concrete placement. One cylinder will be tested for 7-day compressive strength and one cylinder will be tested for 28-day compressive strength. The third cylinder will be tested for 28-day compressive strength if the initial 28-day test indicates deficient strength.

2.3.2 Backfill and Fill Material Testing

All in-place density tests will be conducted in accordance with ASTM 1556, or ASTM D 2922 and ASTM D 3017. When ASTM D 2922 and ASTM D 3017 density tests are used, the results will be verified by performing an ASTM D 1556 density test at a location where ASTM D 2922 and ASTM D 3017 tests were completed. Under slabs or areas to be repaved, backfill will be compacted to 95 percent of ASTM D 698. All other

areas will be compacted to 85 percent of ASTM D 698 but will not require a compaction test. Granular backfill materials including gravel and sand will be compacted to non-movement.

An independent subcontractor will perform the field density tests. Field tests will be performed by a qualified technician. Data collected by the technician will be reviewed by the Site Superintendent and Resident Officer in Charge of Construction (ROICC). If necessary any adjustments in placement and compaction of the fill will be made. Data will be recorded by the technician on a field log that will be presented as part of the field density test submittal.

SECTION 3

3.0 Wastestream Management Plan

Section 3.0 Wastestream Management Plan of the Basewide Work Plan discusses the characterization, disposal, handling, and transportation of contaminated wastes expected to be encountered or generated during the work completed at NCBC Gulfport. All materials transported off-site will be documented by the procedures outlined in Section 3.0 Wastestream Management Plan of the Basewide Work Plan.

SECTION 4

4.0 Environmental Protection Plan

Section 4.0 Environmental Protection Plan provided in the Basewide Work Plan addresses the Environmental Protection Plan to be adhered to during the performance of the work at NCBC Gulfport.

SECTION 5

5.0 Health and Safety Plan

A CTO-Specific Site Health and Safety Plan is provided in Appendix C.

SECTION 6

6.0 Quality Control Plan

Section 6.0 Quality Control Plan provided in the Basewide Work Plan details the quality administrators, the project organization for the work to be completed at NCBC Gulfport, and the definable features of work for each project site. The completed Testing Plan and Log is provided at the end of this section.

The Submittal Register, provided at the end of this section, documents quality control for materials, inspections, and testing in accordance with Appendix B of CCI's Contract Management Plan (dated July 1998). Submittals will be approved by the Navy as identified in the Submittal Register. All approved submittals will be distributed by CCI to the appropriate Navy personnel (CO, ROICC (in duplicate), etc.), the project site, and to the job file.

The site-specific project organization chart, included in this section of the work plan addendum as Figure 6-1, depicts the chain-of-command for this CTO and the individuals responsible for executing the work as indicated. Roles and responsibilities are summarized in Table 6-1.

6.1 Resume of CTO QC Inspector

The resume for the QC Inspector will be provided at a later date.

6.2 Appointing Letter of CTO QC Inspector

The letter appointing the QC Inspector will be provided at a later date.

6.3 Testing Requirements

This section identifies both construction testing and environmental sample analysis laboratories and their certifications; construction testing and environmental sampling and analysis; and test control.

6.3.1 Identification and Certification of Testing Laboratories

The laboratories utilized for this CTO project will function as a subcontractor in some cases and in other cases will function under the subcontractor. These laboratories have not yet been identified.

6.3.2 Construction

Construction testing laboratories utilized will be National Institute of Standards and Technology (NIST) certified.

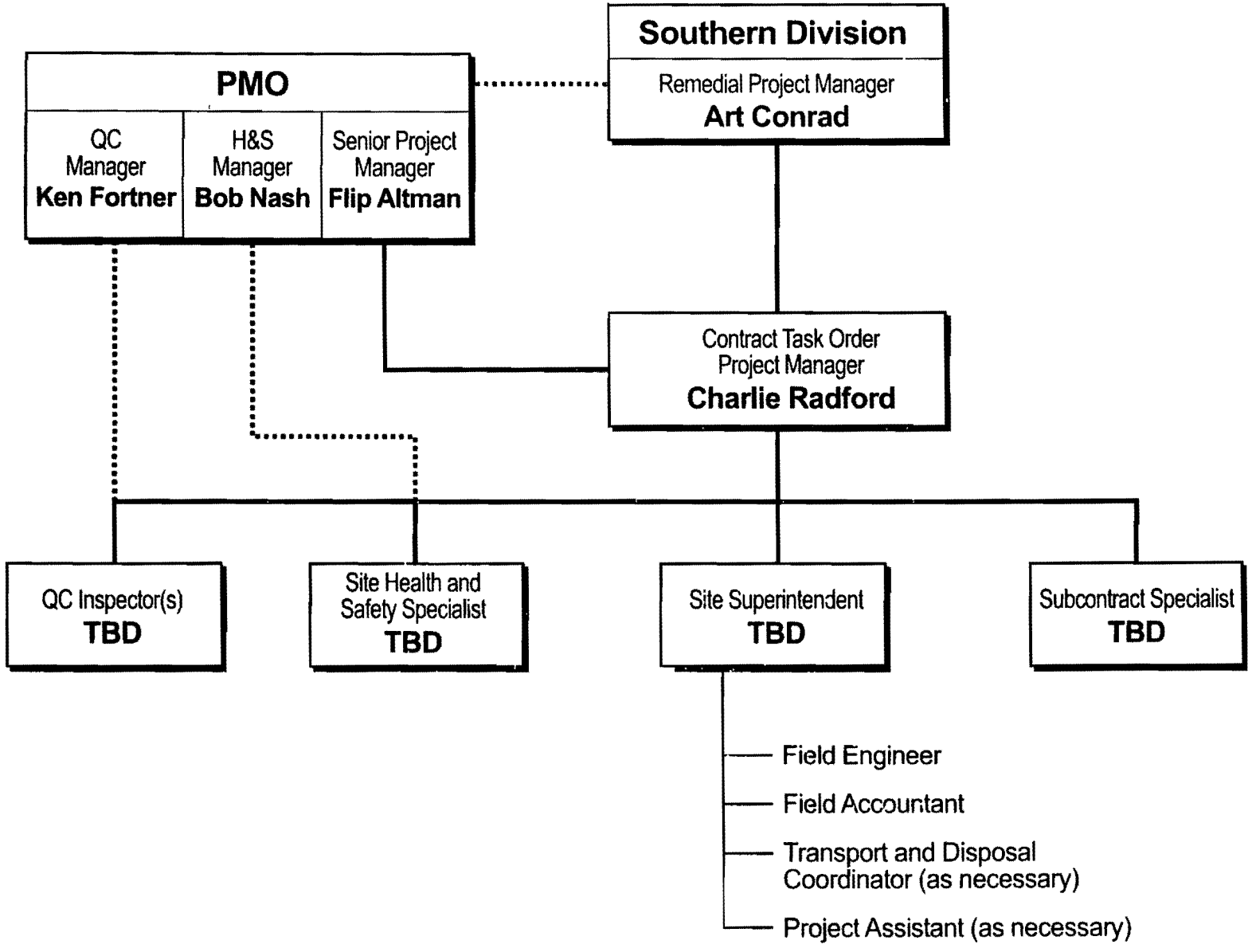

Figure 6-1
Project Organization Chart

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

Role	Responsibility	Authority
Project Manager	• Management and Technical Direction of work • Communication with Southern Division RPM and Navy Technical Representative (NTR) • Overview subcontractor performance • Select CTO staff • Develop CTO Work Plan and supporting plans • Meet CTO Performance Objectives • Prepare status reports	• Approve subcontractor selection • Approve invoices to Southern Division • Approve CTO baseline schedule • Stop work at the site for any reason • Approve payment to vendors and suppliers • Approve payment to subcontractors
Site Superintendent	• 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	• Stop work for subcontractors • Approve corrective action for site work-arounds • Approve materials and labor costs for site operations • Resolve subcontractor interface issues • Approve daily and weekly status reports
Resident Engineer	• 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	• Approve Field Change Requests below ceiling amount • Complete daily compliance report
Field Accountant	• Provide project scheduling coordination • Responsible for site cost tracking and report • Maintain record of site purchases • Maintain government property records	• Approve payables for disposable items
Transportation and Disposal Coordinator	• Develop site specific procedures for transport and disposal practices • Plan and coordinate the transport and disposal of waste • Review subcontractor qualifications • Audit T&S subcontractors compliance with contract requirements	• Approve subcontractors daily report of waste material removed from the site • Approve corrective action plans from T&D subcontractor

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

Role	Responsibility	Authority
Project Assistant	• Maintain CTO files and correspondence • Coordinate CTO schedule and monitor deliverables • Maintain change management records • Maintain change management records • Maintain Action Tracking System log	• Submit Action Tracking System log • Assign correspondence log numbers
QC Inspector(s)	• 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	• Maintain change management records • File daily quantities report • File Lessons Learned Log Sheet • Approve resumption of work for resolved quality issues
Site Health and Safety Specialist	• 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	• Stop work of non-compliant operations • File daily quantities report • File Lessons Learned Log Sheet • Approve resumption of work for resolved quality issues
Subcontract Specialist	• Prepare bid packages • Purchase disposable materials • Maintain subcontract log	

6.3.3 Environmental

Laboratories used for analysis of environmental samples will be Navy certified.

6.3.4 Testing and Sampling

6.3.4.1 Construction Testing

Soil compaction testing will be performed in accordance with ASTM 1556, ASTM D2922, and ASTM D3017.

6.3.4.2 Environmental Sampling and Analysis

Environmental sampling and analysis, including QC sampling and analysis, is specified in Section 2.0, Sampling and Analysis Plan, of this Work Plan Addendum. Samples will be collected in accordance with EPA methods and industry standards of practice.

6.3.5 Test Control

Environmental samples will be collected in accordance with EPA Methods and procedures. Other controls will include, but are not limited to, maintaining a chain of custody; proper handling, packing, and shipping; and the use of qualified laboratories and testing subcontractors.

6.4 CTO Support Organizations

The supporting organizations are yet to be determined.

APPENDIX A

Appendix A

PCB Investigation Report

ABB

October 5, 1997

Southern Division
Naval Facilities Engineering Command
ATTN: Mr. Art Conrad
P.O. Box 190010
2155 Eagle Drive
North Charleston, SC 29418

SUBJECT: **Polychlorinated Biphenyl (PCB) Investigation Adjacent to the Parade Field, Naval Construction Battalion Center (NCBC), Gulfport, Mississippi; Comprehensive Long-Term Environmental Action, Navy District I, Contract No. N62467-89-D-0317/128**

Dear Mr. Conrad:

This abbreviated report contains the PCB and preliminary dioxin results for the investigation performed next to the Parade Field at NCBC Gulfport. This report summarizes the results and provides an interpretation regarding the source, as well as initial considerations for removal strategies.

INTRODUCTION

ABB Environmental Services Inc. (ABB-ES), was contracted to provide an investigation to delineate PCB-contaminated sediments identified in Drainage Area 5 (see Figure 1, Attachment A) adjacent to the Parade Field. The field activities included collecting field-screening samples to delineate volatile organics in the field. The presumption was that the volatile organic contamination in the sediments would coincide the PCB contamination, if both were from the same source.

The screening was followed by sample collection for an offsite laboratory for PCB and dioxin analyses to confirm the field screening delineation. This report concludes with volume estimates that may require removal to meet Mississippi State Department of Pollution Control uncontrolled waste guidelines.

BACKGROUND

Sample results at D5001 (Figure 1, Attachment A) during Phase I of the onsite dioxin delineation indicated elevated levels of dioxins and furans, particularly hexachlorinated-dibenzo-furans (HxCDFs). Upon further investigation, it was determined that these reports of HxCDFs were more likely interferences due to elevated levels of octachlorinated-biphenyl-ethers (OCPEs). To guard against laboratory error, the location was resampled with similar results. OCPEs are commonly associated with transformer oils manufactured in the 1940s and 1950s (U.S. Environmental Protection Agency

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(423) 531-9228

[USEPA], 1990), and in this case may indicate that there was a spill associated with a transformer, or transformer oil, at this location.

Two samples originally collected during the Phase I field investigation for organic carbon analysis were extracted and analyzed for PCBs (USEPA Method 8080 [USEPA, 1986]) to investigate for direct evidence of PCBs and transformer oil contamination. The results of these samples, 180 and 120 parts per million (ppm) total PCB concentration and Aroclor-1260—the only PCB, indicated that transformer oil was the contamination source at this location.

With these results, the base notified the State Department of Pollution Control of the situation and submitted a plan (ABB-ES, 1997) to assess the extent of the contamination. The following sections describe the activities undertaken to characterize and delineate the extent of PCB-related contamination in the sediment of the ditch adjacent to the Parade Field.

FIELD SCREENING ACTIVITIES

The screening activities were initiated on July 31, 1997. The screening technique involved the following steps: (1) collecting a sediment sample from a specific depth interval with a stainless-steel hand auger; (2) rapidly placing the sediment sample in a jar and covering it with aluminum foil to trap volatile organic vapors; (3) allowing the sample to volatilize for approximately 15 minutes; and (4) measuring the head space vapors with a Photovac™ Microtip photoionization detector (PID). With this method, the sample team was able to approximately delineate the extent of PCB contamination by tracking the presence of volatile organic compounds (principally chlorobenzene – since chlorobenzene is often used as the heat transfer medium in electrical transformer oil).

Table 1 in Attachment B summarizes the results from the 14 screening samples. As shown, samples were collected for both horizontal and vertical extent.

The highest screening levels (Figure 2, Attachment A) were observed within a 15-foot area of the original Phase I sampling location near the footbridge. Screening samples were collected from all three of the small ditches that converge 20 feet upstream of the D5001 sampling location. All of these upstream locations produced low (less than 3 ppm) head space screening results — a good indication that the source was not further upstream.

Downstream of the footbridge, screening results decreased steadily (Figure 2, Attachment A) until levels were approximately 4 ppm nearly 60 feet west (downstream) of the footbridge. Based on this screening information, the following was concluded:

- The PCB contamination in the sediment was released into the environment near the footbridge and not further upstream;
- The release did not impact sediment in those upstream ditches;
- The vertical extent of PCB contamination did not appear to extend below approximately 3 feet below the bottom surface of the ditch; and
- Downstream contamination extends for approximately 80 feet.

Additional sediment samples were collected to characterize and quantitate PCB levels in the ditch and confirm the screening results and conclusions (Figure 3, Attachment A). The following section presents the sampling activities and discusses the sampling results.

SAMPLING ACTIVITIES AND RESULTS

A total of 10 sediment samples were collected and sent to an offsite laboratory for PCB (USEPA 8080 [USEPA, 1986]) analysis. The sample locations were selected to (1) confirm that upstream ditches were free of PCB contamination, (2) confirm the horizontal extent of PCB contamination as determined by the screening samples, (3) confirm the vertical extent of PCB contamination, and (4) determine the types and levels of PCB contamination.

Three additional samples (P1301, P1312, and P1401) were collected for dioxin/furan analysis and one sample (P1401) was collected for a full suite of analytical compounds to attempt to identify the source(s) of contamination in this area. The sample for the full suite was collected from a location determined to have the highest levels of PCBs and other potential contaminants.

Table 2 in Attachment B summarizes the analytical results from these samples.

The results presented in Table 2, which are also presented on Figure 2, clearly show the limited extent of PCB-contaminated sediment. Horizontally, the extent of contamination is approximately 100 feet long, while the width is constrained to the width of the ditch, about 10 feet. The depth of contamination appears to be approximately 3 feet at a maximum between sampling locations D5019 and D5030. On either side of this relatively small area, the contamination is generally less than 1.5 feet below the bottom of the sediment.

The maximum levels of PCBs observed from this round of sampling were 140 ppm (at the revisited D5001), as compared to 180 ppm from the same location analyzed during Phase I sampling. The discrepancy may be due to the fact that during the Phase I sampling, the biased dioxin sampling approach was used which tends to collect the surficial organic-rich material. During this investigation, samples were collected using a more traditional approach which composites the top 1-foot of sediment. Clearly, the difference between the two results at D5001 are not large enough to conclusively state that the PCB contamination is most concentrated only in the top few inches of sediment because of the sampling and laboratory variations associated with a single sample. However, this possibility will be considered during future activities conducted at this location.

The dioxin samples collected at three locations confirmed the earlier observations of very high levels of OCPEs, which are a common component of transformer oil. Again, these ethers interfered with the Method 8290 dioxin/furan analysis and produced artificially elevated results (see Table 2, Attachment B). For example, the dioxin toxicity equivalent (TEQ) results at D5001 and D5030 reported by the laboratory were approximately 95 percent ether interference. Therefore, there is not a significant amount of dioxin present in any of these samples.

CONCLUSIONS AND RECOMMENDATIONS

The analytical results from the laboratory analyses confirmed the screening results performed in the field. The horizontal extent of PCB contamination was determined to be present only in 100 linear feet of ditch. The vertical extent observed through the screening and sampling activities was at a maximum

near the footbridge (D5030 and D5001) at approximately 3 feet. Otherwise, the depth appeared to be restricted to the top foot and a half. Additionally, the results confirmed PCB levels above 50 ppm, the action level for PCB contamination in soil and sediment. All of the PCB levels reported were entirely due to Aroclor-1260, often a good indicator of electrical transformer oil.

Based on the horizontal and vertical extent of PCB contamination, the removal of approximately 150 cubic yards of sediment would be required to achieve a clean-up level of 1 ppm for PCB. This clean-up level is based on Toxic Substances Control Act (TOSCA) standards set forth in TOSCA Verification of PCB Spill Cleanup (USEPA 1985 and 1986).

The levels of contamination in this ditch requires that institutional controls be maintained to keep the public from interacting with the ditch, and keeping the public out of the excavation area during removal activities. These institutional controls inclue yellow caution tape and posted no trespassing signs, although more stringent controls may be necessary during excavation and transportation of contaminated sediments.

Before excavation and removal can be accomplished, the temporary diversion of surface water is required, since the presence of surface water would greatly increase the difficulties involved with excavation. Specifically, the presence of surface water would increase the volume of excavation, require that the excavated materials be transported in a water tight container, and would likely require a certain amount of dewatering before shipment to the disposal facility because of saturation limits imposed by most handling facilities. All of these issues greatly impact cost and implementation of this activity.

The simplest and cheapest surface water diversion method in this case would be to use sheet piling upstream and downstream of the area of excavation. Pumps would be initially used to dewater the area of excavation in between the sheet pilings, and then later to maintain upstream water levels. The drawback of this method is the possibility of severe storms that often occur in the area — an inch or more of rain may require that the sheet pilings be removed to allow the storm water to drain. This method was used successfully during the 28th Street Removal of dioxin contaminated sediment immediately north of the base.

Another method of surface water diversion, that is not so reliant on dry weather, would be the cutting of a temporary trench to carry surface water around the area of excavation. Again, the sheet pilings would keep the surface water from entering the excavation and pumps would remove the remaining surface water and groundwater that may seep into the ditch. This method of surface water diversion would require more pre-planning and coordination with the activity, as well as the additional costs associated with the trenching effort for the temporary by-pass.

The excavation of PCB-contaminated sediments should be performed within a well-established exclusion zone to prevent injury or exposure of non-workers. The excavation of these sediments should be done using a grade-all or equivalent piece of equipment to minimize volume generated during the removal. The sediments should also be placed in plastic-lined roll-off trucks prior to their shipment to at a TOSCA-approved facility. Onsite PCB test kits would provide sufficient confirmation testing in the field, while limiting the number of offsite laboratory confirmation samples.

If you should have any questions concerning the above information, please do not hesitate to call Penny Baxter or Robert Fisher at (423) 531-1922.

Sincerely,

ABB ENVIRONMENTAL SERVICES, INC.

Robert Fisher, P.G.
Project Lead

Penny Baxter, P.G.
Project Manager

[0835-010]

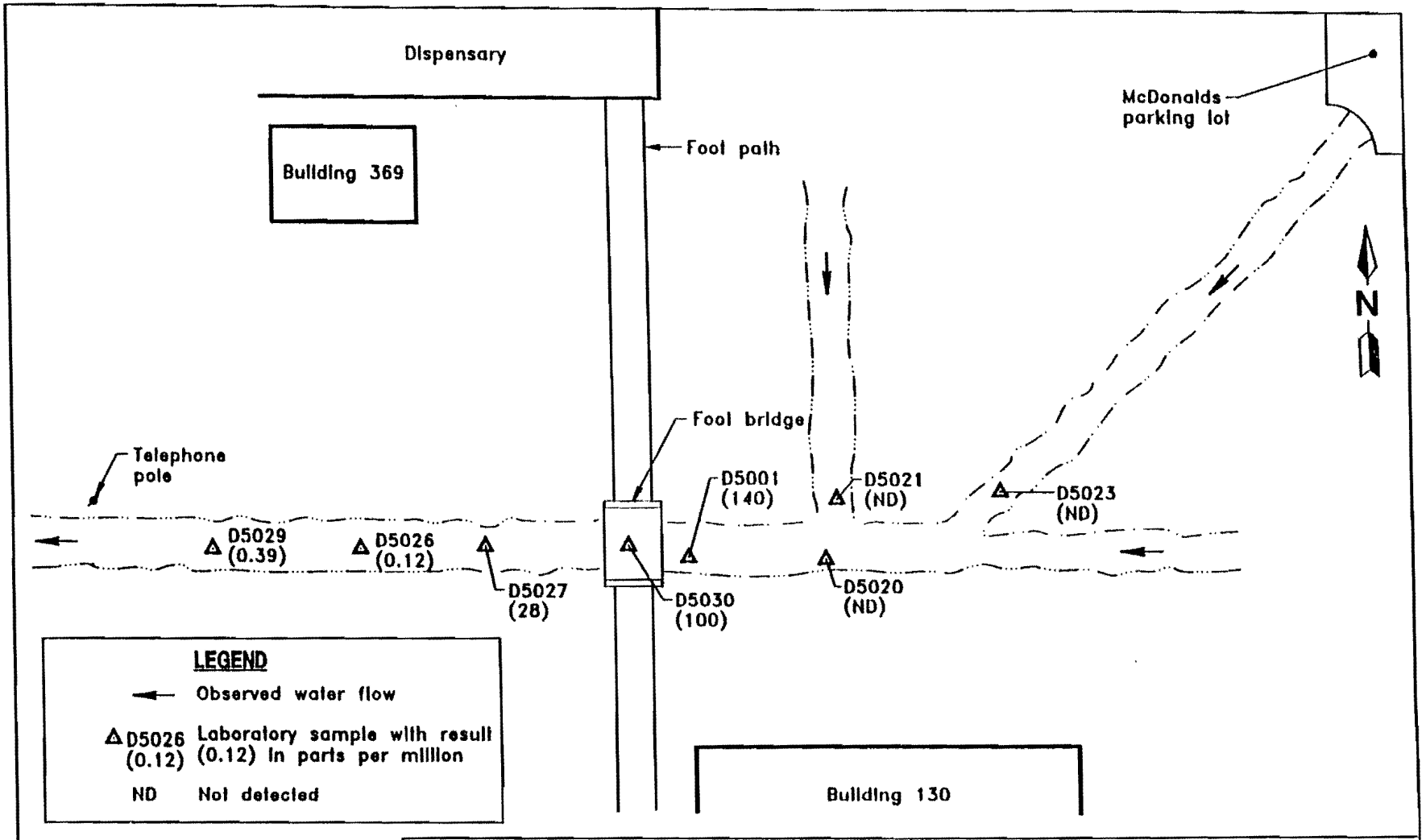
pc: Gordon Crane, NCBC Gulfport

Attachments:

Attachment A: Figures
Attachment B: Tables
Attachment C: Glossary
Attachment D: References

ATTACHMENT A

FIGURES



0 10 20
SCALE: 1 INCH = 20 FEET

D:\DWG\ABU\08535-26\PCB_INV\FIG_2\DMF\09-10-97

FIGURE 1
LABORATORY PCB RESULTS

POLYCHLORINATED BIPHENYL (PCB) INVESTIGATION ADJACENT TO PARADE FIELD

NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI

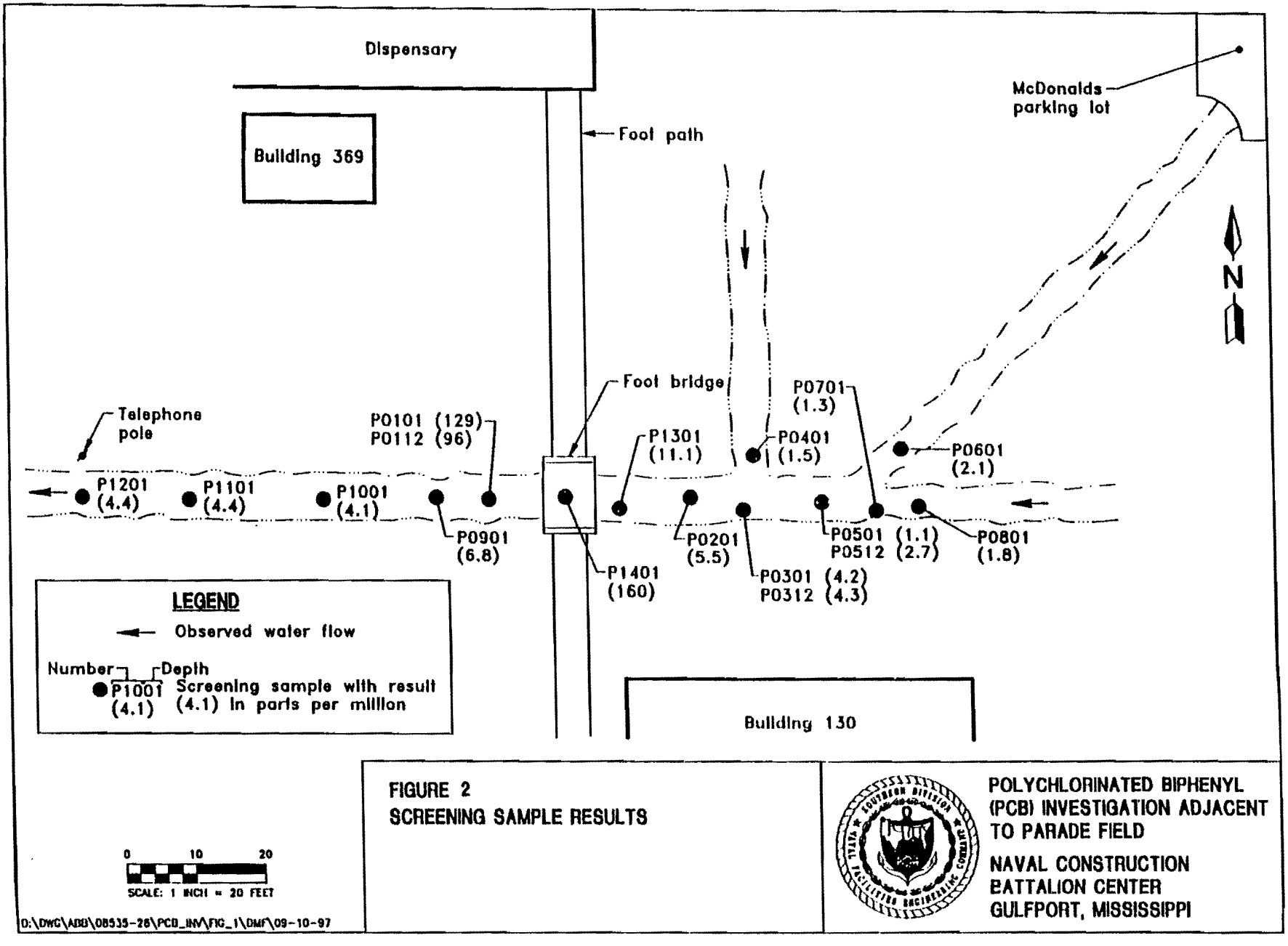


FIGURE 2
SCREENING SAMPLE RESULTS

POLYCHLORINATED BIPHENYL (PCB) INVESTIGATION ADJACENT TO PARADE FIELD

NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI

ATTACHMENT B

TABLES

Table 1
Summary of PID Screening Results

PCB Investigation Adjacent to the Parade Field
Naval Construction Battalion Center
Gulfport, Mississippi

Date	Screening Sample Location	Depth (feet)	Lithology	PID Readings (ppm)
7/31/97	1	0.0 to 0.5	organic silt/sand	4.0
7/31/97	1	0.5 to 1.5	gray sand	129.0
7/31/97	1	1.5 to 2.0	gray sand	95.5
7/31/97	5	0.0 to 1.0	gray sand	1.1
7/31/97	5	1.0 to 2.0	gray sand	2.7
7/31/97	4	0.0 to 1.0	gray sand	1.5
7/31/97	6	0.0 to 1.0	gray sand	2.1
7/31/97	7	0.0 to 1.0	gray sand	1.3
7/31/97	8	0.0 to 1.0	dark gray sand	1.5
8/1/97	9	0.0 to 1.0	gray sand/silt	6.8
8/1/97	10	0.0 to 1.0	gray sand/silt	4.1
8/1/97	11	0.0 to 1.0	gray sand/silt	4.4
8/1/97	12	0.0 to 1.0	gray sand/silt	4.4
8/1/97	3	0.0 to 1.0	gray sand/silt	4.2
8/1/97	3	1.0 to 2.0	gray sand/silt	4.3
8/1/97	2	0.0 to 1.0	gray sand/silt	5.5

Notes: PID = photoionization detector.
PCB = polychlorinated biphenyls.
ppm = parts per million.

Table 2
PCB Laboratory Results

PCB Investigation Adjacent to the Parade Field
Naval Construction Battalion Center
Gulfport, Mississippi

Screening Number	Sample Number[1]	Screening Sample Location	Depth (feet)	PCB Result[2] (parts per million)	Dioxin Result[3] (parts per trillion)TEQ
P0301	D5020	3	0 to 1	ND	—
P0401	D5021	4	0 to 1	ND	—
P0601	D5023	6	0 to 1	ND	—
P0901	D5026	9	0 to 1	0.12	—
P1001	D5027	10	0 to 1	28.0	89.3
P1201	D5029	12	0 to 1	0.39	—
P1301	D5001	13	0 to 1	140.0	[4]1,036 (44.6)
P1312	D5001	13	1 to 2	33.0	—
P1401	D5030	14	0 to 1	100.0	[4]2,648 (185)
P1501	D5031	15	0 to 1	ND	—

[1] The confirmatory numbers were altered for inclusion in the Gulfport database.
[2] PCB results were measured using U.S. Environmental Protection Agency Method 8080.
[3] Results were 2,3,7,8-tetrachloro-p-dibenzodioxin TEQ equivalents as measured using U.S. Environmental Protection Agency Method 8290.
[4] Result elevated due to interference by di-phenylethers that are part of the transformer oil; results without the phenyl-ethers are shown in parentheses.

Notes: PCB = polychlorinated biphenyl.
TEQ = toxicity equivalent.
ND = not detected.
— = not analyzed.

ATTACHMENT C

GLOSSARY

GLOSSARY

ABB-ES	ABB Environmental Services Inc.
HxCDFs	hexachlorinated-dibenzo-furans
NCBC	Naval Construction Battalion Center
OCPEs	octachlorinated-biphenyl-ethers
PCB	polychlorinated biphenyl
PID	photoionization detector
ppm	parts per million
TEQ	toxicity equivalent
TOSCA	Toxic Substances Control Act
USEPA	U.S. Environmental Protection Agency

ATTACHMENT D

REFERENCES

REFERENCES

ABB Environmental Services, Inc. 1997. *Groundwater Monitoring Workplan*. Prepared for Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina.

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USEPA. Office of Solid Waste and Emergency Response. 1986. *Test Methods for Evaluating Solid Waste: Volume IB: Laboratory Manual Physical/Chemical Methods*. Third edition. SW-846. Washington, D.C. (November).

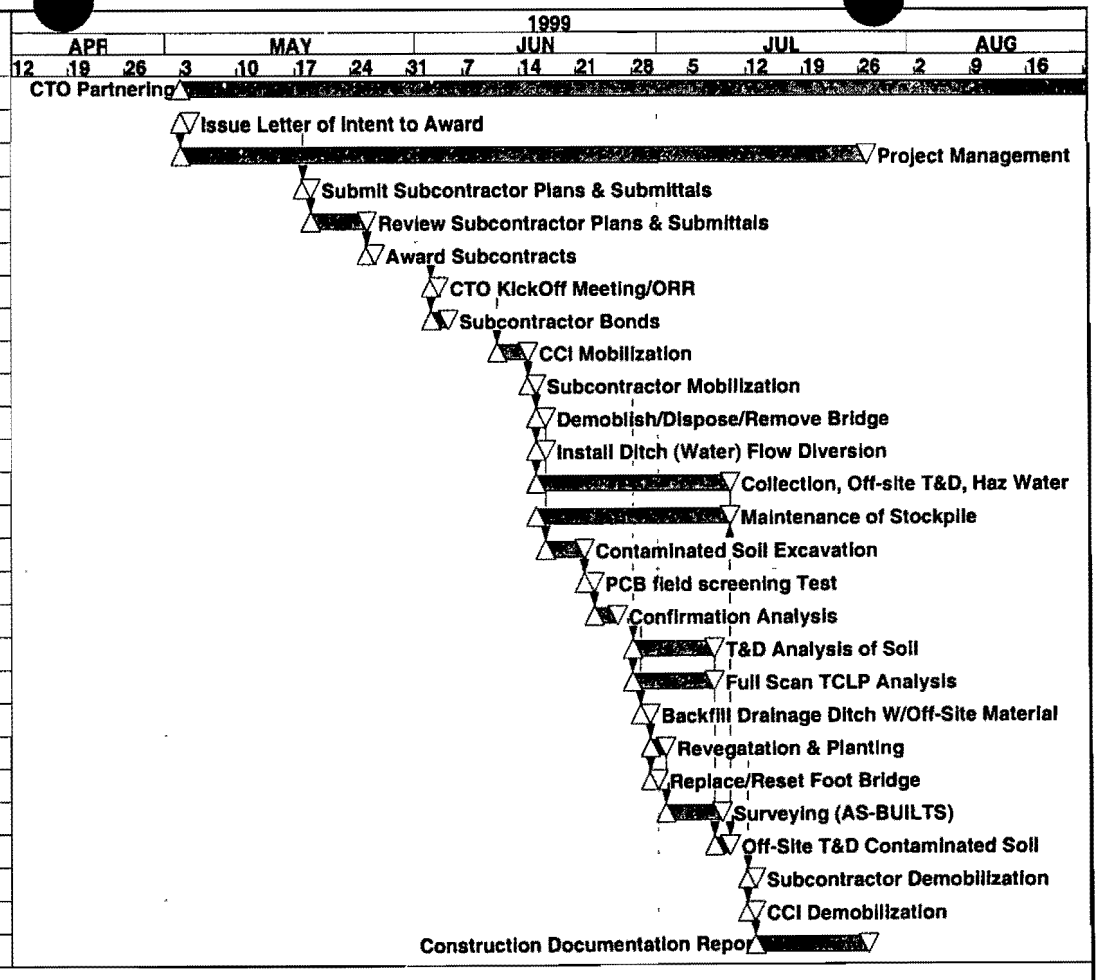
USEPA. 1990. Mass Spectral Confirmation of Chlorinated and Brominated Diphenylethers in Human Adipose Tissues.

APPENDIX G

Appendix B

Project Schedule

Activity Description	Orig Dur	Early Start	Early Finish
CTO Partnering	263	03MAY99*	03MAY00
Issue Letter of Intent to Award	1	03MAY99*	03MAY99
Project Management	61*	03MAY99	26JUL99
Submit Subcontractor Plans & Submittals	1	18MAY99	18MAY99
Review Subcontractor Plans & Submittals	5	19MAY99	25MAY99
Award Subcontracts	1	26MAY99	26MAY99
CTO KickOff Meeting/ORR	1	03JUN99	03JUN99
Subcontractor Bonds	2	03JUN99	04JUN99
CCI Mobilization	2	11JUN99	14JUN99
Subcontractor Mobilization	1	15JUN99	15JUN99
Demoblish/Dispose/Remove Bridge	1	16JUN99	16JUN99
Install Ditch (Water) Flow Diversion	1	16JUN99	16JUN99
Collection, Off-site T&D, Haz Water	18	16JUN99	09JUL99
Maintenance of Stockpile	18	16JUN99	09JUL99
Contaminated Soil Excavation	3	17JUN99	21JUN99
PCB field screening Test	1	22JUN99	22JUN99
Confirmation Analysis	3	23JUN99	25JUN99
T&D Analysis of Soil	8	28JUN99	07JUL99
Full Scan TCLP Analysis	8	28JUN99	07JUL99
Backfill Drainage Ditch W/Off-Site Material	1	29JUN99	29JUN99
Revegatation & Planting	2	30JUN99	01JUL99
Replace/Reset Foot Bridge	1	30JUN99	30JUN99
Surveying (AS-BUILTS)	5	02JUL99	08JUL99
Off-Site T&D Contaminated Soil	2	08JUL99	09JUL99
Subcontractor Demobilization	1	12JUL99	12JUL99
CCI Demobilization	1	12JUL99	12JUL99
Construction Documentation Report	10	13JUL99	26JUL99



Project Start	29MAR99
Project Finish	03MAY00
Data Date	29MAR99
Run Date	05APR99

Early Bar
Progress Bar
Critical Activity

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C008

Sheet 1 of 1

NAVAL CONTRUCTION BATTALION CENTER
GULFPORT, MS CTO 0008
PHASE 3 COMPLETION SCHEDULE

CH2MHILL Constructors, Inc.

APPENDIX C

Appendix C

Health and Safety Plan

Health and Safety Plan
Naval Construction Battalion Center
Gulfport, Mississippi

Revision No. 00

Contract No. N62467-98-D-0995
Contract Task Order No. 0008

Submitted to:

U.S. Naval Facilities
Engineering Command
Southern Division

Prepared by:

CH2MHILL
Constructors, Inc.
115 Perimeter Center Place, N.E.
Suite 700
Atlanta, GA 30346

April 1999

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This health and safety plan will be kept on the site during field activities and will be reviewed and updated as necessary. The plan adopts, by reference, the standards of practice (SOP) in the CH2M HILL *Corporate Health and Safety Program, Program and Training Manual,* and CCI Health and Safety Guidelines as appropriate. The Site Health and Safety Specialist coordinator (SHSS) is to be familiar with these SOPs and the content of this plan. Site personnel must sign Attachment 1. In addition, this plan adopts procedures in the work plan for the project.

1.0 Project Information and Description

Client or Owner: Southern Division, Navy RAC

Project No: 149295

CCI Project Manager: Charlie Radford

Office: Atlanta

Site Name: Naval Construction Battalion Center

Site Address: Broad Street, Gulfport, Mississippi

Date Health and Safety Plan Prepared: April 1999

Date(s) of Initial Visit: March 1999

Date(s) of Site Work: April - October 1999

Site Access: Access is through the Main Gate off Broad Street

Site Size: The site occupies about 3 square miles just West of Gulfport, Mississippi

Site Topography: Coastal plain, flat

Prevailing Weather: Hot, humid summers with chance of hurricanes

Site Description and History: The site has been used by Naval Construction at least since the mid-1960s. Material storage, such as Agent Orange was maintained on the facility.

2.0 Project Organization and Tasks to be Performed under this Plan

2.1 Project Organization

Client: Southern Division, Naval Engineering Facilities Command

CCI:
Project Manager: Charlie Radford/ATL
Field Team Leader: TBD/ATL
Refer to Section 4.0 for field staff.

Contractors and Subcontractors: Refer to Section 4.2.

2.2 Description of Tasks

Refer to project documents (i.e., work plan) for detailed task information. A health and safety risk analysis has been performed for each task and is incorporated in this plan through task-specific hazard controls and requirements for monitoring and protection. Tasks in addition to those listed below require an approved amendment to this plan before additional work begins. Refer to Section 10.2 for procedures related to tasks that do not involve hazardous waste operations and emergency response (HAZWOPER).

2.2.1 HAZWOPER-Regulated Tasks

- Excavation of polychlorinated byphenyl (PCB) soils
- PCB soil sampling

2.2.2 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 HSM is required before these tasks are conducted on regulated hazardous waste sites.** Non-HAZWOPER related tasks for this CTO are listed in Table 2-1.

TABLE 2-1
Non-HAZWOPER-Related Tasks

Task	Restrictive Conditions
None	

3.0 Hazard Evaluation and Control

3.1 Heat and Cold Stress

Reference HC2M HILL SOP HS-09, Heat and Cold Stress

3.1.1 Preventing Heat Stress

The following guidelines relate to heat stress prevention:

- Drink 16 ounces of water before beginning work, such as in the morning or after lunch. Disposable (e.g., 4-ounce) cups and water maintained at 50° to 60°F should be available. Under severe conditions, drink 1 to 2 cups every 20 minutes, for a total of 1 to 2 gallons per day. Take regular breaks in a cool, preferably air-conditioned, area. Do not use alcohol in place of water or other nonalcoholic fluids. Decrease your intake of coffee and caffeinated soft drinks during working hours. Monitor for signs of heat stress.
- Acclimate to site work conditions by slowly increasing workloads; e.g., do not begin site work with extremely demanding activities.
- Use cooling devices, such as cooling vests, to aid natural body ventilation. The 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.
- During hot weather, conduct field activities in the early morning or evening if possible.
- Provide adequate shelter to protect personnel against radiant heat (sun, flames, hot metal), which can decrease physical efficiency and increase the probability of heat stress.
- In hot weather, rotate shifts of workers.
- Maintain good hygiene standards by frequently changing clothing and by showering. Clothing should be permitted to dry during rest periods. Persons who notice skin problems should consult medical personnel.

3.1.2 Symptoms and Treatment of Heat Stress

The symptoms of heat stress are listed in Table 3-1.

TABLE 3-1
Symptoms and Treatment of Heat Stress

	Heat Syncope	Heat Rash (*miliaria rubra*, "prickly heat")	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!

3.1.3 Heat-Stress Monitoring

For field activities part of ongoing site work activities in hot weather, the following procedures should be used to monitor the body's physioiogical response to heat and to estimate the work-cycle/rest-cycle when workers are performing moderate levels of work. These procedures should be considered when the ambient air temperature exceeds 70°F, the relative humidity is high (greater than 50 percent), or when the workers exhibit symptoms of heat stress.

The heart rate 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 110 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 110 beats/minute at the beginning of the next rest period, the following work cycle should be further shortened by 33 percent. The procedure is continued until the rate is maintained below 110 beats/minute, or 20 beats/minute above resting pulse.

3.1.4 Preventing Cold Stress

The following guidelines relate to cold stress prevention:

- Be aware of the symptoms of cold-related disorders, and ***wear proper clothing for the anticipated fieldwork.***
- Consider monitoring the work conditions and adjusting the work schedule, using guidelines developed by the U.S. Army (wind-chill index) and the National Safety Council (NSC).
- *Wind-Chill Index.* This measure relates the dry bulb temperature and the wind velocity. It is used only to estimate the combined effect of wind and low air temperatures on exposed skin. The wind-chill index sometimes is limited in its usefulness because the index does not take into account the body part that is exposed, the level of activity, or the amount or type of clothing worn. For those reasons, it is used only as a guideline to warn workers when they are in a situation that can cause cold-related illnesses. Used in conjunction with the NSC guidelines, the wind-chill index provides a starting point for adjusting work and warm-up schedules.
- *NSC Guidelines for Work and Warm-Up Schedules.* The cold-exposure limits recommended by the NSC can be used in conjunction with the wind-chill index to estimate work and warm-up schedules for fieldwork. The guidelines are not absolute; ***workers should be monitored for symptoms of cold-related illness.*** If symptoms are not observed, the work duration can be increased.
- The wind-chill index and the NSC guidelines are in the CH2M HILL *Corporate Health and Safety Program, Program and Training Manual,* SOP HS-09.

3.1.5 Symptoms and Treatment of Cold Stress

The symptoms and treatment of cold stress are listed in Table 3-2.

TABLE 3-2
Symptoms and Treatment of Cold Stress

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

3.2 Locating Buried Utilities

3.2.1 Local Utility Mark-Out Service

Name: Base Civil Engineer

Phone:

3.2.2 Procedures for Locating Buried Utilities

Procedures for locating buried utilities are listed as follows:

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

3.3 General Physical (Safety) Hazards and Controls

Engineering and administrative controls are to be implemented by the party in control of the site or the hazard (i.e., CH2M HILL, subcontractor, or contractor). CH2M HILL employees and subcontractors must, at a minimum, remain aware of hazards affecting them regardless of who is responsible for controlling the hazards. Specialty subcontractors are responsible for the safe operation of their equipment (e.g., drill rig, heavy equipment). CH2M HILL employees are not to operate, or assist in the operation of, any subcontractor or contractor equipment. General physical hazards and controls are listed in Table 3-3.

TABLE 3-3
General Physical (Safety) Hazards and Controls

Hazard (Refer to SOP, or HSP Section)	Engineering Controls, Administrative Controls, and Work Practices	Tasks: Excavation	Tasks: IDW Drum Sampling and Disposal[a]
Flying debris/objects (HS-07)	Provide shielding and PPE; maintain distance.	X	X
Noise > 85 dBA	Noise protection and monitoring required.	X	X
Electrical	• Make certain third wire is properly grounded. Do not tamper with electrical wiring unless qualified to do so. Ground as appropriate. • Project field sites should have ground fault circuit interrupters (GFCIs) installed for all wiring, including extension cords. • Heavy equipment (e.g., drill rig) should remain at least 15 feet from overhead power line for power lines of 50 kV or less. For each 10 kV > 50, increase distance by ½ foot. • Operate and maintain equipment according to manufacturer's instructions. • Use only extension cords that are three-wire grounded. Cords passing through work areas must be covered or elevated to protect from damage. • Use only electrical tools and equipment that are either effectively grounded or double-insulated UL approved. • Properly label switches, fuses, and circuit breakers. • Remove cord from an outlet by grasping the plug, not pulling the cord. • Protect all electrical equipment, tools, switches, etc., from elements. • Avoid physical contact with power circuit. • Only qualified electricians are to install and work on electrical circuits and equipment.	X	
Buried utilities, drums, tanks, etc. (Section 3.3)	Locate buried utilities, drums, tanks, etc., before digging or drilling and mark location.	X	
Slip, trip, fall hazards (e.g., wet/muddy surface, unstable surface)	Provide slip-resistant surfaces, ropes, and/or other devices to be used.	X	X
	Brace and shore equipment		X
Back injury (HS-29)	Use proper lifting techniques, or provide mechanical lifting aids.	X	X
Trenches/excavations (HS-32)	Make certain trench meets OSHA standard before entering. All excavations > 4 feet deep must be sloped or shored. and have a ladder every 25 feet. Personnel and equipment must remain at least 2 feet from edge of trench at all times.	X	
Protruding objects	Flag visible objects.	X	X

TABLE 3-3
General Physical (Safety) Hazards and Controls

Hazard (Refer to SOP, or HSP Section)	Engineering Controls, Administrative Controls, and Work Practices	Tasks	
		Excavation	IDW Drum Sampling and Disposal[a]
Visible lightning	Stop work.	X	X
Vehicle traffic (HS-24)	Provide temporary traffic controls, including trained flaggers and lookouts. Implement traffic control program when required.	X	
Fire prevention and control (HS-22)	• No spark sources allowed within exclusion or decontamination zones. • Appropriate firefighting equipment must be available on the site. • Extinguishers are to be inspected visually every month and undergo an annual maintenance check. • Post "Exit" signs over exiting doors, and post "Fire Extinguisher" signs over extinguisher locations. Keep areas near exits and extinguishers clear. Open flames are prohibited in the vicinity of flammable materials. • Combustible materials stored outside at least 10 feet from building. • Unnecessary combustible materials and flammable or combustible liquids must not be allowed to accumulate. • Flammable or combustible liquids must be kept in approved containers, and must be stored in an approved storage cabinet.	X	X
Inadequate illumination	Site work will be performed during daylight hours whenever possible. Work conducted during hours of darkness will require enough illumination intensity "to read a newspaper without difficulty."	X	X

TABLE 3-3
General Physical (Safety) Hazards and Controls

Hazard (Refer to SOP, or HSP Section)	Engineering Controls, Administrative Controls, and Work Practices	Tasks	
		Excavation	IDW Drum Sampling and Disposal[a]
Heavy equipment	• Become familiar with hazards specific to the equipment being used. • Always confirm that the operator is aware of your location, particularly when you approach or pass by equipment. • Backup alarm is required for heavy equipment. Do not count on backup alarms always functioning. Look around when alarm sounds. • Do not ride equipment not designed for passengers. • Do not climb on operating equipment. • Do not place yourself between fixed and moving parts or objects. • Do not stand adjacent to the equipment. • Stay clear of equipment on cross slopes and unstable terrain. • Stay clear of pile-driving operations. • Stay outside the turning radius of the equipment. • Operators using all-terrain vehicles (ATV) must be trained; other ATV requirements may apply. • Observer must remain in contact with operator and signal safe backup. • Personnel must remain outside the turning radius.	X	X

TABLE 3-3
General Physical (Safety) Hazards and Controls

Hazard (Refer to SOP, or HSP Section)	Engineering Controls, Administrative Controls, and Work Practices	Tasks	
		Excavation	IDW Drum Sampling and Disposal[a]
IDW Drum sampling	Personnel are allowed to handle and/or sample drums containing investigation-derived waste (IDW) only; handling or sampling other drums requires a plan revision or amendment approved by the CH2M HILL HSM. The following control measures will be taken when sampling drums containing IDW: • Minimize transportation of drums. • Minimize number of people involved in the actual sampling. • Sample only labeled drums or drums known to contain IDW. • Use caution when sampling bulging or swollen drums. Relieve pressure slowly. • If drums contain, or potentially contain, flammable materials, use nonsparking tools to open. • Picks, chisels, and firearms may not be used to open drums. • Reseal bung holes or plugs whenever possible. • Avoid mixing incompatible drum contents. • Sample drums without leaning over the drum opening. • If there is evidence of contamination on the lid of the drum, cover the lid with plastic sheeting. • Transfer the content of drums using a method that minimizes contact with material. • Air monitoring and PPE requirements specified in sections 5 and 6 must address drum sampling. • Spill-containment procedures specified in Section 8 must be appropriate for the material to be handled.	X	X

3.4 Biological Hazards and Controls

Biological hazards and controls are listed in Table 3-4.

TABLE 3-4
Biological Hazards and Controls

Hazard and Location	Control Measures
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. Carry the victim or have him/her walk slowly if the victim must be moved. Try to identify the type of snake: note color, size, patterns, and markings.
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.
Exposure to **bloodborne pathogens** may occur when rendering first aid or CPR, or when coming into contact with medical or other potentially infectious material, or when coming into contact with landfill waste or waste streams containing such infectious material.	Training is required before a task involving potential exposure is performed. 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.
Bees 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 the 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.
Other potential biological hazards:	None Anticipated

3.5 Tick Bites

Reference CH2M HILL HS-03, Tick Bites

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.

Prevention against tick bites includes avoiding tick areas; wearing tightly woven light-colored clothing with long sleeves and wearing pant legs tucked into boots or socks; spraying **only outside** of clothing with insect repellent containing permethrin or permanone, and spraying skin with DEET; and checking yourself frequently for ticks and showering as soon as possible. To prevent chemical repellents from interfering with sample analyses, exercise care while using repellents during the collection and handling of environmental samples.

If bitten by a tick, carefully remove the tick with tweezers, grasping the tick as close as possible to the point of attachment while being careful not to crush the tick. After removing the tick, wash your hands and disinfect and press the bite area. The removed tick should be saved. Report the bite to human resources personnel.

Look for symptoms of Lyme disease or Rocky Mountain spotted fever (RMSF): Lyme - a rash 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, bone pain may develop. If symptoms appear, seek medical attention.

3.6 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 for operating in contaminated areas. Radiological hazards and controls are listed in Table 3-5.

TABLE 3-5
Radiological Hazards and Controls

Hazards	Controls
None Known	None Required

3.7 Hazards Posed by Chemicals Brought on the Site

3.7.1 Hazard Communication

Reference CH2M HILL Hazard Communication Manual

CH2M HILL's *Hazard Communication Program Manual,* which is available from area or regional offices and from the Corporate Human Resources Department in Denver, Colorado. The project manager is to request Material Safety Data Sheets (MSDSs) from the client or from the contractors and the subcontractors for chemicals to which CCI employees potentially are exposed. The SHSS is to do the following:

- Give employees required site-specific HAZCOM training.
- Confirm that the inventory of chemicals brought on the site by subcontractors is available.
- Before or as the chemicals arrive on the site, obtain an MSDS for each hazardous chemical.
- Label chemical containers with the identity of the chemical and with hazard warnings, if any.

The chemical products listed in Table 3-6 will be used on the site. Refer to Attachment 2 for MSDSs.

TABLE 3-6
Chemical Hazards

Chemical	Quantity	Location
Isobutylene (calibration gas)	1 liter, compressed gas	Support Zone
Alconox/Liquinox (detergent)	< 1 liter, powder/liquid	Support/Decontamination Zone

3.7.2 Shipping and Transportation of Chemical Products

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

Nearly all chemicals brought to the site are considered hazardous materials by the U.S. Department of Transportation (DOT). All staff who ship the materials or transport them by road must receive the 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.

3.8 Contaminants of Concern

Reference Project Files for More-Detailed Contaminant Information

Contaminants of concern are listed in Table 3-7.

3.9 Potential Routes of Exposure

Potential routes of exposure include:

- **Dermal:** Contact with contaminated media. This route of exposure is minimized through proper use of PPE, as specified in Section 5.
- **Inhalation:** Vapors and contaminated particulates. This route of exposure is minimized through proper respiratory protection and monitoring, as specified in sections 5 and 6, 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 eating, drinking, or smoking).

TABLE 3-7
Contaminants of Concern

Contaminant	Location and Highest[a] Concentration (ppm)	Exposure Limit[b]	IDLH[c]	Symptoms and Effects of Exposure	PIP[d] (eV)
PCBs (Aroclor 1260)	SS: 3,400 ppb	0.5 mg/m^3	5 Ca	Eye and skin irritation, acne-form dermatitis, liver damage, reproductive effects	UK
Chlorobenzene (in transformer oil) used for indication of spilled material	Not Analyzed	75 ppm	1,000 ppm	Irritation eyes, skin, nose; drowsiness, CNS Depression	9.07

Footnotes:
a: Specify sample-designation and media: SB (Soil Boring), A (Air), D (Drums), GW (Groundwater), L (Lagoon), TK (Tank), SS (Surface Soil), SL (Sludge), SW (Surface Water),
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

4.0 Personnel

4.1 CCI Employee Medical Surveillance and Training

Reference CH2M HILL SOP HS-01, Medical Surveillance, and HS-02, Health and Safety Training

The employees listed in Table 4-1 are enrolled in the CH2M HILL Comprehensive Health and Safety Program and 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 received 8 hours of supervisor and instrument training and can serve as site health and specialist (SHSS) for the level of protection indicated. 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 that involve the potential for exposure to health and safety hazards. Employees designated "FA-CPR" are currently certified by the American Red Cross, or equivalent, in first aid and cardiopulmonary resuscitation (CPR). At least one FA-CPR designated employee must be present during all tasks performed in exclusion or decontamination zones that involve the potential for exposure to health and safety hazards. 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's SOP HS-04, *Reproduction Protection*, including obtaining a physician's statement of the employee's ability to perform hazardous activities, before being assigned fieldwork.

TABLE 4-1
Project Personnel Safety Certifications

Employee Name	Office	Responsibility	SHSS/FA-CPR
Charlie Radford	ATL	Project Manager	Level D SHSS; FA-CPR
TBD		Site Superintendent	
TBD		SHSS	
Robert Nash	ATL	H&S Manager	Level B SHSS; FA-CPR

4.2 Field Team Chain of Command and Communication Procedures

4.2.1 Client

Contact Name: Ken Lott, Naval Engineering Facilities Command, Charleston, South Carolina

4.2.2 CCI

Project Manager: Charlie Radford /ATL

Health and Safety Manager: Robert Nash/ATL

Site Superintendent: TBD

Site Safety and Health Specialist: Craig Haas/ATL

The SHSS is responsible for contacting the site superintendent and the project manager. In general, the project manager either will contact or will identify the client contact. The Health and Safety Manager (HSM) should be contacted as appropriate. The SHSS or the project manager must notify the client and the HSM when a serious injury or a death occurs or when health and safety inspections by OSHA or other agencies are conducted. Refer to sections 10 through 12 for emergency procedures and phone numbers.

4.2.3 Subcontractors

Reference Section 3, Corporate Health and Safety Program Manual

When specified in the project documents (e.g., contract), this plan may cover CCI subcontractors. However, this plan does not address hazards associated with tasks and equipment that the subcontractor has expertise in (e.g., operation of drill rig). Specialty subcontractors are responsible for health and safety procedures and plans specific to their work. Specialty subcontractors are to submit plans to CCI for review and approval before the start of fieldwork. Subcontractors must comply with the established health and safety plan(s). CCI must monitor and enforce compliance with the established plan(s).

Subcontractor: TBD

Subcontractor Contact:

Telephone:

General health and safety communication with subcontractors contracted with CCI and covered by this plan is to be conducted as follows:

- Request that the subcontractor, if a specialty subcontractor, submit a safety or health plan applicable to their expertise (e.g., drill-rig safety plan or nuclear density gauge [NDG] health plan); attach the reviewed plan.
- Supply subcontractors with a copy of this plan, and brief them on its provisions.
- Direct health and safety communication to the subcontractor-designated safety representative.

- Notify the subcontractor-designated representative if a violation of the plan(s) is observed. Specialty subcontractors are responsible for mitigating hazards in which they have expertise.
- If a hazard condition persists, inform the subcontractor. If the hazard is not mitigated, stop affected work as a last resort and notify the project manager.
- When an apparent imminent danger exists, promptly remove all affected personnel. Notify the project manager.
- Make clear that consistent violations of the health and safety plan by a subcontractor may result in termination of the subcontract.

5.0 Personal Protective Equipment (PPE)

Reference CH2M HILL SOP HS-07, Personal Protective Equipment; HS-08, Respiratory Protection

5.1 PPE Specifications

PPE specifications are listed in Table 5-1.

TABLE 5-1
PPE Specifications[a]

Task	Level	Body	Head	Respirator[b]
General work uniform when no chemical exposure is anticipated	D	Work clothes; steel-toe, steel-shank leather work boots; work gloves	Hardhat[c] Safety glasses Ear protection[d]	None required
Soil Excavation	Modified D	**COVERALLS:** Uncoated Tyvek® **BOOTS:** Steel-toe, steel-shank chemical-resistant boots OR steel-toe, steel-shank leather work boots with outer rubber boot covers **GLOVES:** Inner surgical-style nitrile glove AND outer chemical-resistant nitrile glove.	Hardhat[c] Splash shield[c] Safety glasses Ear protection[d]	None required
Soil Excavation	C	**COVERALLS:** Polycoated Tyvek® **BOOTS:** Steel-toe, steel-shank chemical-resistant boots OR steel-toe, steel-shank leather work boots with outer rubber boot covers **GLOVES:** Inner surgical-style nitrile glove AND outer chemical-resistant nitrile glove.	Hardhat[c] Splash shield[c] Ear protection[d] Spectacle inserts	APR, full face, MSA Ultratwin or equivalent; with GME-H[e] cartridges or equivalent
NOT APPROVED FOR THIS ACTIVITY	B	**COVERALLS:** Polycoated Tyvek® **BOOTS:** Steel toe, steel-shank chemical-resistant boots OR steel-toe, steel-shank leather work boots with outer rubber boot covers **GLOVES:** Inner surgical-style nitrile glove AND outer chemical-resistant nitrile glove.	Hardhat[c] Splash shield[c] Ear protection[d] Spectacle inserts	Positive-pressure demand self-contained breathing apparatus (SCBA): MSA Ultralite, or equivalent

[a] Modifications are as indicated. CCI will provide PPE to only CCI employees.
[b] No facial hair that would interfere with respirator fit is permitted.
[c] Hardhat and splash-shield areas are to determined by the SHSS.
[d] Ear protection should be worn while working around drill rigs or other noise-producing equipment or when conversations cannot be held at distances of 3 feet or less without shouting. Refer to Section 6 for other requirements.
[e] The GME-H cartridge is the new standard-issue cartridge. Available stock of the previously standard GMC-H cartridges may be used for tasks covered by this plan.

5.2 Upgrading or Downgrading Level of Protection

The reasons for upgrading or downgrading the PPE level are as follows:

- Upgrade
  - Request from individual performing task
  - Change in work task 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 6) exceeded
- Downgrade
  - 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

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 specified in Section 5.0 and an SHSS who meets the requirements specified in Section 4.1 is present.

6.0 Air Monitoring Specifications

Reference CH2M HILL SOP HS-06, Air Monitoring

Air monitoring specifications are listed in Table 6-1.

TABLE 6-1
Air Monitoring Specifications

Instrument	Action Levels[a]		Frequency[b]	Calibration
PID: MiniRAM with 10.6eV lamp or equivalent	0 to 5 ppm	Level D	Initially and periodically during task	Daily
	>5 ppm to 20 ppm	Level C		
	> 20 ppm	Stop Work		

Notes
[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 is acceptable; more frequently may be appropriate. Monitoring results should be recorded. Documentation should include instrument and calibration information, time and measurement result, personnel monitored, and place/location where measurement is taken (e.g., "Breathing Zone/MW-3," "at surface/SB-2," etc.).

6.1 Calibration Specifications

Calibration specifications are listed in Table 6-2. Refer to the respective manufacturer's instructions for proper instrument-maintenance procedures.

TABLE 6-2
Calibration Specifications

Instrument	Gas	Span	Reading	Method
PID: MiniRAM, 10.6 eV bulb	100 ppm isobutylene	CF=53	53 ppm ±5 ppm	1.5 lpm REG T-Tubing

6.2 Air Sampling

Sampling 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.

6.2.1 Method Description

Real time air monitoring will be performed. Detector tubes will be used in the Fuel Farm area to determine the presence of benzene and/or vinyl chloride. Contact HSM if assistance is required.

6.2.2 Personnel and Areas

Results must be sent immediately to the HSM. Regulations may require reporting to monitored personnel. Results reported to: **HSM**: Robert Nash/ATL.

7.0 Decontamination

Reference CH2M HILL SOP HS-13, Decontamination

The SHSS must monitor the effectiveness of the decontamination procedures. Decontamination procedures found to be ineffective will be modified by the SHSS.

7.1 Decontamination Specifications

Decontamination specifications are listed in Table 7-1.

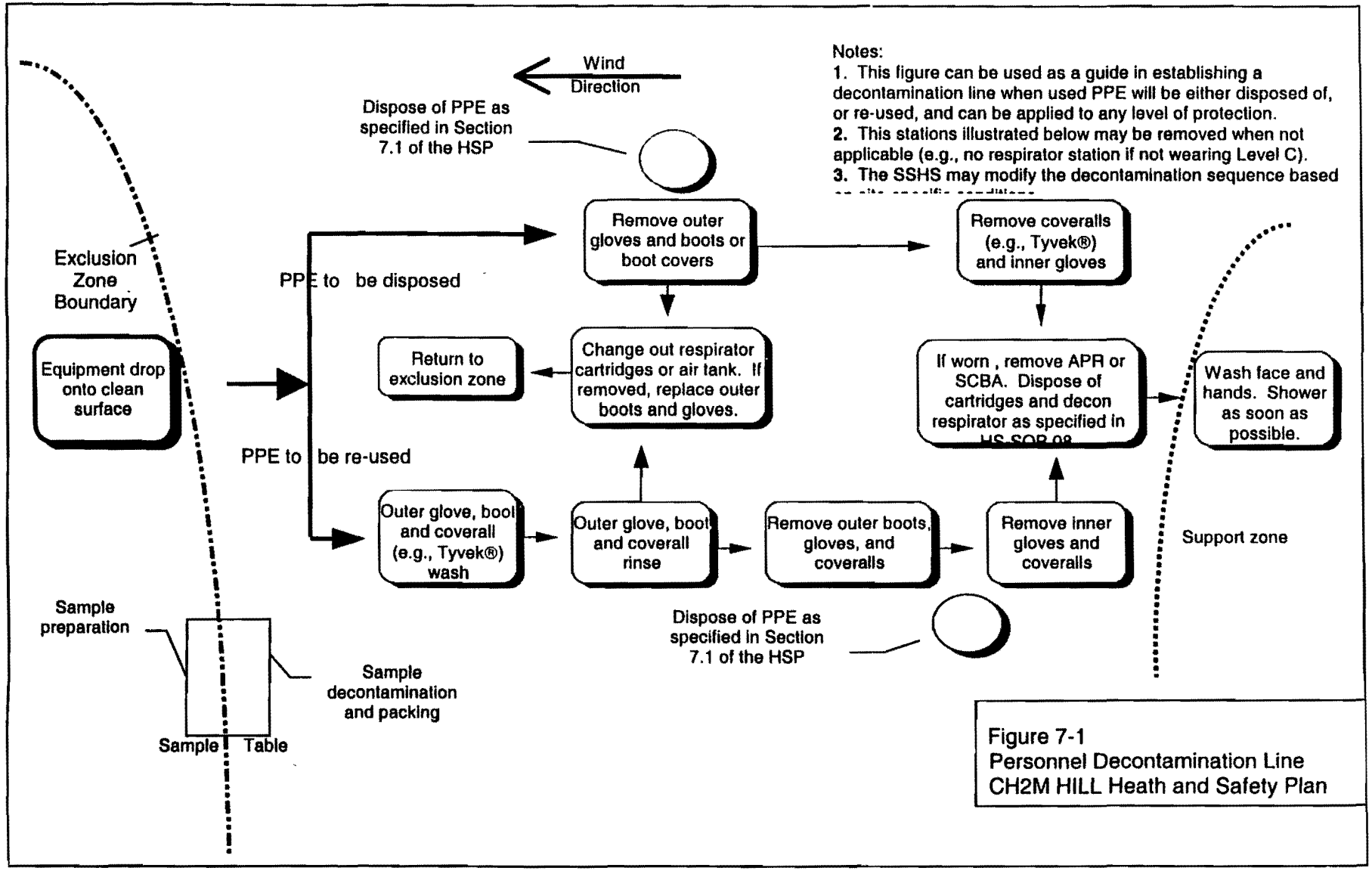
TABLE 7-1
Decontamination Specifications

Personnel	Sample Equipment	Heavy Equipment
• Boot wash/rinse • Glove wash/rinse • Body-suit removal • Respirator removal • Hand wash/rinse • Face wash/rinse • Shower ASAP • **PPE-disposal method:** Dispose in drums • **Water-disposal method** Dispose in Drums	• Wash/rinse equipment • Solvent-rinse equipment • **Solvent-disposal method:** Dispose in Drums	• Power wash • Steam clean • **Water-disposal method:** Dispose in Drums

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 typical establishment of work zones, including the decontamination line. Work zones are to be modified by the SHSS to accommodate task-specific requirements.



Notes:
1. This figure can be used as a guide in establishing a decontamination line when used PPE will be either disposed of, or re-used, and can be applied to any level of protection.
2. This stations illustrated below may be removed when not applicable (e.g., no respirator station if not wearing Level C).
3. The SSHS may modify the decontamination sequence based

Figure 7-1
Personnel Decontamination Line
CH2M HILL Heath and Safety Plan

8.0 Spill-Containment Procedures

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

9.0 Confined-Space Entry

Reference CH2M HILL SOP HS-17, Confined Space Entry

Confined-space entry requires health and safety procedures, training, and a permit. Activities to remove the oil/water separators may require confined space entry.

When planned activities include confined-space entry, permit-required confined spaces accessible to CCI personnel are to be identified before the task begins. The SHSS will confirm that permit spaces are properly posted or that employees are informed of their locations and informed of their hazards.

10.0 Site-Control Plan

10.1 Site-Control Procedures

The following site control procedures will be implemented for this CTO:

- The site safety and health specialist (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 at sites where project field offices, trailers, or equipment storage boxes are established. Posters can be obtained by calling either 800/548-4776 or 800/999-9111.
- Field Trailers: Post "Exit" signs above exit doors, and post "Fire Extinguisher" signs above locations of extinguishers. Keep areas near exits and extinguishers clear.
- Determine wind direction.
- Establish work zones: support, decontamination, and exclusion zones. Delineate work zones with flags or cones as appropriate. SZ should be upwind of the site.
- Establish decontamination procedures, including respirator-decontamination procedures, and test the procedures.
- Use access control at the entry and exit from each work zone.
- Store chemicals in appropriate containers.
- Make MSDSs available for onsite chemicals to which employees are exposed.
- 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."
- Establish procedures for disposing of material generated on the site.
- 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 CH2M HILL SOP 18, *Health and Safety* Checklist. Deficiencies are to be noted, reported to the HSM, and corrected.

10.2 HAZWOPER Compliance Plan

Reference CH2M HILL SOP HS-17, Health and Safety Plans

The following procedures are to be followed when certain activities do not require 24- or 40-hour training. Note that prior approval from the HSM is required before these tasks are conducted on regulated hazardous waste sites.

- Certain parts of the site work may be covered by state or federal HAZWOPER standards and therefore require training and medical monitoring. Anticipated tasks must be included in subsection 2.2.1.

- Air sampling must confirm that there is no exposure to gases or vapors before non-HAZWOPER-trained personnel are allowed on the site. Other data (e.g., soil) also must document that there is no potential for exposure. The HSM must approve the interpretation of these data. Refer to subsections 3.8 and 6.2 for contaminant data and air sampling requirements, respectively.

- Non-HAZWOPER-trained personnel must be informed of the nature of the existing contamination and its locations, the limits of their access, and the emergency action plan for the site. Non-HAZWOPER-trained personnel also must be trained in accordance with all other state and federal OSHA requirements, including 29 CFR 1910.1200 (HAZCOM). Refer to subsection 3.7.1 for hazard communication requirements.

- 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 volatile contaminants. Non-HAZWOPER-trained personnel should be monitored whenever the belief is that there may be a possibility of exposure (e.g., change in site conditions), or at some reasonable frequency to confirm that there is no exposure. Refer to Section 6.1 for air monitoring requirements.

- 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 leave the site.

If HAZWOPER-regulated tasks are conducted concurrently with nonregulated tasks, non-HAZWOPER-trained subcontractors must be removed from areas of exposure. If non-HAZWOPER-trained personnel remain on the site while a HAZWOPER-regulated task is conducted, the contaminant/exposure area (exclusion zone) must be posted, non-HAZWOPER-trained personnel must be reminded of the locations of restricted areas and the limits of their access, and real-time monitoring must be conducted. Non-HAZWOPER-trained personnel at risk of exposure 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.

11.0 Emergency Response Plan

Reference CH2M HILL SOP HS-12, Emergency Response

11.1 Pre-Emergency Planning

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

- Review the facility emergency and contingency plans where applicable.
- Locate the nearest telephone; determine what onsite communication equipment is available (e.g., two-way radio, air horn).
- Identify and communicate chemical, safety, radiological, and biological hazards.
- Confirm and post emergency telephone numbers, evacuation routes, assembly areas, and route to hospital; communicate the information to onsite personnel.
- Post site map marked with locations of emergency equipment and supplies, and post OSHA job-site poster. The OSHA job-site poster is required at sites where project field offices, trailers, or equipment-storage boxes are established. Posters can be obtained by calling either 800/548-4776 or 800/999-9111.
- Field Trailers: Post "Exit" signs above exit doors, and post "Fire Extinguisher" signs above locations of extinguishers. Keep areas near exits and extinguishers clear.
- Review changed site conditions, onsite operations, and personnel availability in relation to emergency response procedures.
- Evaluate capabilities of local response teams where applicable.
- 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, chemical and vapor releases.
- Review notification procedures for contacting CCI's medical consultant and team member's occupational physician.
- Rehearse the emergency response plan once before site activities begin, including driving the route to the hospital.

- Brief new workers on the emergency response plan.
- The SHSS will evaluate emergency response actions and initiate appropriate follow-up actions.

11.2 Emergency Equipment and Supplies

The SHSS should mark the locations of emergency equipment on the site map and should post the map. Emergency equipment and its location are listed in Table 11-1.

TABLE 11-1
Emergency Equipment

Emergency Equipment and Supplies	Location
20 lb (or two 10-lb) fire extinguisher (A, B, and C classes)	In Field Vehicle
First aid kit	In Field Vehicle
Eye wash	In Field Vehicle
Potable water	In Field Vehicle
Bloodborne-pathogen kit	In Field Vehicle
Additional equipment (specify)	

11.3 Emergency Medical Treatment

Emergency medical treatment procedures are as follows:

- Notify appropriate emergency response authorities listed in sections 12 and 13 (e.g., 911).
- During a time of no emergency, contact CCI's medical consultant for advice and guidance on medical treatment.
- 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.
- Notify the field team leader and the project manager of the injury.
- Make certain that the injured person is accompanied to the emergency room.
- Notify the health and safety manager.

- Notify the injured person's human resources department within 24 hours.
- Prepare an incident report – refer to CH2M HILL SOP 12, *Emergency Response and First Aid*. Submit the report to the corporate director of health and safety and the corporate human resources department (COR) within 48 hours.
- When contacting the medical consultant, state that you are calling about a CCI matter, and give your name, your 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.

11.4 Nonemergency Procedures

The procedures listed above may be applied to nonemergency incidents. Injuries and illnesses (including overexposure to contaminants) must be reported to Human Resources. If there is doubt about whether medical treatment is necessary, or if the injured person is reluctant to accept medical treatment, contact the CCI medical consultant.

When contacting the medical consultant, state that the situation is a CCI matter, and give your name, your 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. Follow these procedures as appropriate.

11.5 Incident Response

In fires, explosions, or chemical releases, actions to be taken include the following:

- Shut down CCI operations and evacuate the immediate work area.
- Account for personnel at the designated assembly area(s).
- Notify appropriate response personnel.
- 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.

11.6 Evacuation

Evacuation procedures are as follows:

- Evacuation routes will be designated by the SHSS before work begins.
- Onsite and offsite assembly points will be designated before work begins.
- Personnel will leave the exclusion zone and assemble at the onsite assembly point upon hearing the emergency signal for evacuation.
- Personnel will assemble at the offsite point upon hearing the emergency signal for a site evacuation.

- The SHSS and a "buddy" will remain on the site after the site has been evacuated (if possible) to assist local responders and advise them of the nature and location of the incident.
- The SHSS accounts for all personnel in the onsite assembly zone.
- A person designated by the SHSS before work begins will account for personnel at the offsite assembly area.
- The SHSS will write up the incident as soon as possible after it occurs and will submit a report to the corporate director of health and safety.

11.7 Evacuation Routes and Assembly Points

Evacuation routes and assembly areas (and alternative routes and assembly areas) are specified on the site map posted at the site.

11.8 Evacuation Signals

Evacuation signals are listed in Table 11-2.

TABLE 11-2
Evacuation Procedures

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

12.0 Emergency Response

12.1 Emergency Response Telephone Numbers

Emergency response telephone numbers are listed in Table 12-1.

TABLE 12-1
Emergency Response Telephone Numbers

Site Address:	Phone:
	Cellular Phone:
Police: Base Security	**Phone:** 601/871-2631
Fire: Gulfport Fire Department	**Phone:** 911
Ambulance: Gulfport Fire Department	**Phone:** 911
Hospital: Columbia Garden Park Hospital	**Phone:** 228/864-4210
Address: 1520 Broad Ave., Gulfport, MS 39501	

*When using a cellular phone outside the telephone's normal calling area, exercise caution in relying on the cellular phone to activate 911. When the caller is outside the normal calling area, the cellular service carrier should connect the caller with emergency services in the area where the call originated, but this may not occur. Telephone numbers of backup emergency services should be provided if a cellular phone is relied on to activate 911.

Route to Hospital: From Main Gate, proceed one block on Broad Avenue. Hospital is on the left.

12.2 Government Agencies Involved in Project

Federal Agency and Contact Name: Naval Engineering Facilities Command

Contact the project manager. Generally, the project manager will contact relevant government agencies.

Columbia Garden Park Hospital
1520 Broad Ave
Gulfport, MS 39501-3601
Phone: 228-864-4210

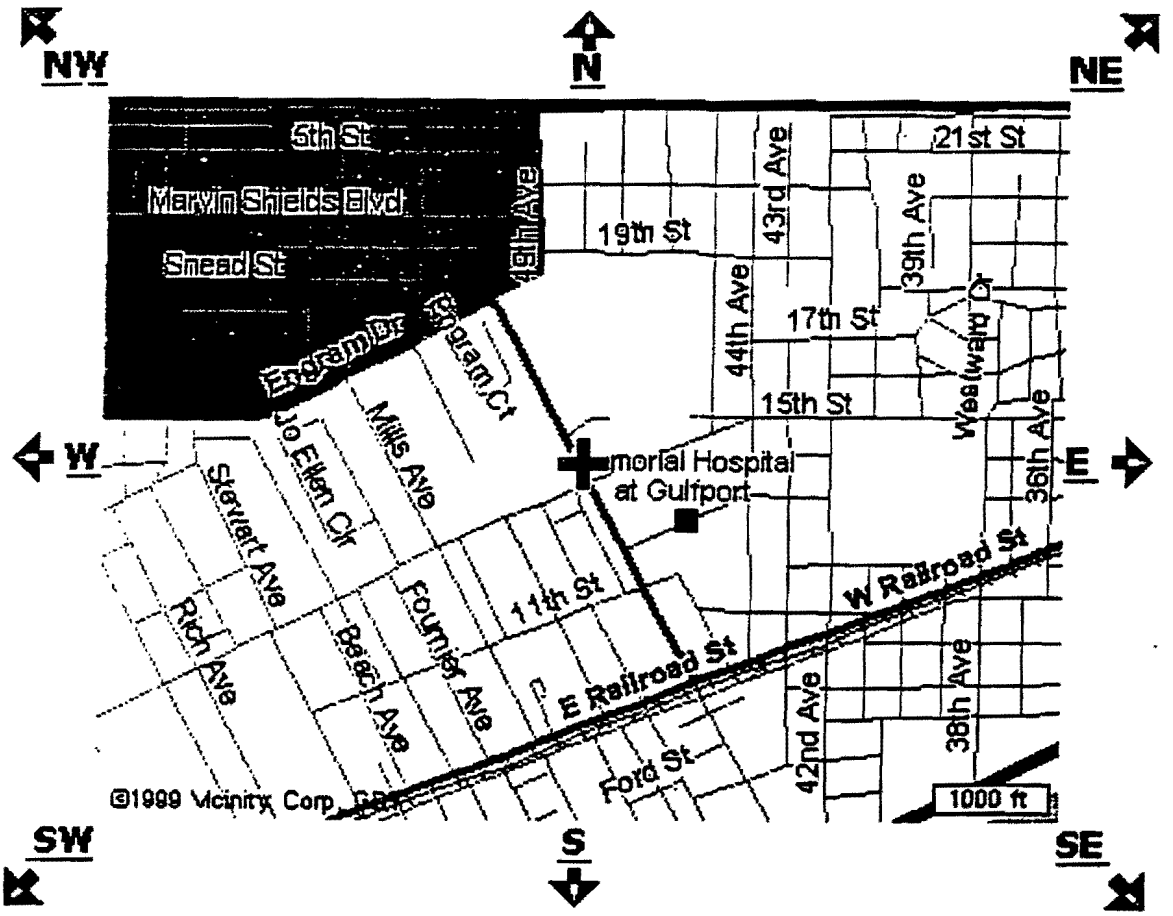


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Figure 12-1
Hospital Location Map

13.0 Emergency Contacts

If an injury occurs, notify the injured person's personnel office as soon as possible after obtaining medical attention for the injured person. Notification MUST be made within 24 hours of the injury. Emergency contacts are listed in Table 13-1.

TABLE 13-1
Emergency Contacts

CCI Medical Consultant Dr. Peter P Greany WorkCare Inc. 333 S. Anita Drive Orange, CA 92868 800/455-6155 (After-hours calls will be returned within 20 minutes.)	**Occupational Physician (Regional or Local)**
Corporate Director Health and Safety Mollie Netherland/SEA 206/453-5005	**Site Safety and Health Specialist (SHSS)** TBD
Health and Safety Manager (HSM) Robert Nash/ATL 770/604-9095	**Project Manager** Charlie Radford/ATL 770/604-9095
Radiation Health Manager (RHM) Dave McCormack/SEA 206/453-5000	**Regional Human Resources Department** Nancy Orr /DEN 303/771-0925
Client Ken Lott, Naval Engineering Facilities Command	**Corporate Human Resources Department** Julie Zimmerman/COR 303/771-0900
Federal Express Dangerous Goods Shipping 800/238-5355 CH2M HILL Emergency Number for Shipping Dangerous Goods 800/255-3924	**Worker's Compensation and Auto Claims** GAB Business Services, Inc. 800/747-7222 After hours 800/621-5410 Report fatalities AND report vehicular accidents involving pedestrians, motorcycles, or more than two cars.

14.0 Approval

This site-specific health and safety plan has been written for use by CCI only. CCI 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.

14.1 Original Plan

Written By: **Date:**

Approved By: Robert Nash **Date:** April 1999

14.2 Revisions

Revisions Made By: **Date:**

Revisions to Plan:

Revisions Approved By: **Date:**

15.0 Distribution

Distribution for this plan is listed in Table 15-1.

TABLE 15-1
Distribution List

Name	Office	Responsibility	Number of Copies
Robert Nash	ATL	Health and Safety Manager/Approver	1
Charlie Radford	ATL	Project Manager	1
TBD		Site Superintendent/Field Team	
TBD	ATL	Site Safety and Health Specialist	1
Client	NA	Client Project Manager	

Attachment 1

Employee Signoff

Employee Signoff

The employees listed below have been given a copy of this health and safety plan, have read and understood it, and agree to abide by its provisions.

Employee Name	Employee Signature and Date

Attachment 2

Material Safety Data Sheets

Alconox ®

MATERIAL SAFETY DATA SHEET

Alconox, Inc.
9 East 40th Street, Suite 200
New York, NY 10016

I. IDENTIFICATION

Product Name (as appears on label)	ALCONOX
CAS Registry Number:	Not Applicable
Effective Date:	January 1, 1998
Chemical Family:	Anionic Powdered Detergent

II. HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

There are no hazardous ingredients in ALCONOX as defined by the OSHA Standard and Hazardous Substance List 29 CFR 1910 Subpart Z.

III. PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point (F):	Not Applicable
Vapor Pressure (mm Hg):	Not Applicable
Vapor Density (AIR=1):	Not Applicable
Specific Gravity (Water=1):	Not Applicable
Melting Point:	Not Applicable
Evaporation Rate (Butyl Acetate=1):	Not Applicable
Solubility in Water:	Appreciable-Soluble to 10% at ambient conditions
Appearance:	White powder interspersed with cream colored flakes.

IV. FIRE AND EXPLOSION DATA

Flash Point (Method Used):	None
Flammable Limits:	LEL: No Data UEL: No Data
Extinguishing Media:	Water, dry chemical, CO_2, foam
Special Firefighting Procedures:	Self-contained positive pressure breathing apparatus and protective clothing should be worn when fighting fires involving chemicals.
Unusual Fire and Explosion Hazards:	None

V. REACTIVITY DATA

Stability:	Stable
Hazardous Polymerization:	Will not occur
Incompatibility (Materials to Avoid):	None
Hazardous Decomposition or Byproducts:	May release CO_2 on burning

VI. HEALTH HAZARD DATA

Route(s) of Entry:	Inhalation? Yes Skin? No Ingestion? Yes
Health Hazards (Acute and Chronic):	Inhalation of powder may prove locally irritating to mucous membranes. Ingestion may cause discomfort and/or diarrhea. Eye contact may prove irritating.
Carcinogenicity:	NTP? No IARC Monographs? No OSHA Regulated? No
Signs and Symptoms of Exposure:	Exposure may irritate mucous membranes. May cause sneezing.
Medical Conditions Generally Aggravated by Exposure:	Not established. Unnecessary exposure to this product or any industrial chemical should be avoided. Respiratory conditions may be aggravated by powder.
Emergency and First Aid Procedures:	Eyes: Immediately flush eyes with water for at least 15 minutes. Call a physician. Skin: Flush with plenty of water. Ingestion: Drink large quantities of water or milk. Do not induce vomiting. If vomiting occurs readminister fluids. See a physician for discomfort.

VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken if Material is Released or Spilled:	Material foams profusely. Recover as much as possible and flush remainder to sewer. Material is biodegradable.
Waste Disposal Method:	Small quantities may be disposed of in sewer. Large quantities should be disposed of in accordance with local ordinances for detergent products.
Precautions to be Taken in Storing and Handling:	Material should be stored in a dry area to prevent caking.
Other Precautions:	No special requirements other than the good industrial hygiene and safety practices employed with any industrial chemical.

VIII. CONTROL MEASURES

Respiratory Protection (Specify Type):	Dust mask - Recommended
Ventilation:	Local Exhaust-Normal Special-Not Required Mechanical-Not Required Other-Not Required
Protective Gloves:	Impervious gloves are useful but not required.
Eye Protection:	Goggles are recommended when handling solutions.
Other Protective Clothing or Equipment:	None
Work/Hygienic Practices:	No special practices required

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH BUT NO WARRANTY IS EXPRESSED OR IMPLIED.

GEORGIA STEEL & CHEMICAL -- FK300 SPECIAL RESPIRATOR CLEANER PLUS - QUATERNARY AMMONIUM GERMIC
MATERIAL SAFETY DATA SHEET
NSN: 685000F046838
Manufacturer's CAGE: 3J051
Part No. Indicator: A
Part Number/Trade Name: FK300 SPECIAL RESPIRATOR CLEANER PLUS

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General Information

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Item Name: QUATERNARY AMMONIUM GERMICIDAL DETERGENT DISINFECTANT
Company's Name: GEORGIA STEEL & CHEMICAL CO INC
Company's Street: 10810 GUILFORD RD BAY 104
Company's City: ANNAPOLIS JUNCTION
Company's State: MD
Company's Country: US
Company's Zip Code: 20701-5000
Company's Emerg Ph #: 301-317-5502/800-296-0351
Company's Info Ph #: 800-296-0351/301-317-5502
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SE
Date MSDS Prepared: 01JAN96
Safety Data Review Date: 31MAY96
Preparer's Company: GEORGIA STEEL & CHEMICAL CO INC
Preparer's St Or P. O. Box: 10810 GUILFORD RD BAY 104
Preparer's City: ANNAPOLIS JUNCTION
Preparer's State: MD
Preparer's Zip Code: 20701-5000
MSDS Serial Number: BYNPW

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Ingredients/Identity Information

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Proprietary: NO
Ingredient: QUATERNARY AMMONIUM COMPOUNDS, BENZYL-C12-18-ALKYLDIMETHYL, CHLORIDES *96-1*
Ingredient Sequence Number: 01
Percent: 5-10
NIOSH (RTECS) Number: 1001813QA
CAS Number: 68391-01-5

Proprietary: NO
Ingredient: OCTYL DECYL DIMETHYL AMMONIUM CHLORIDE; N,N-DIMETHYL-N-OCTYL-1-DECANAMINIUM CHLORIDE; AMMONIUM, DECYLDIMETHYLOCTYL
Ingredient Sequence Number: 02
Percent: 1-5
NIOSH (RTECS) Number: HD6520000
CAS Number: 32426-11-2

Proprietary: NO
Ingredient: DIDECYL DIMETHYL AMMONIUM CHLORIDE; DIMETHYLDIDECYLAMMONIUM CHLORIDE; BTC 1010; BARDAC 22
Ingredient Sequence Number: 03
Percent: 1-5
NIOSH (RTECS) Number: BP6560000
CAS Number: 7173-51-5

Proprietary: NO
Ingredient: DIDECYL DIMETHYL AMMONIUM CHLORIDE
Ingredient Sequence Number: 04
Percent: 1-5
NIOSH (RTECS) Number: RG8250000
CAS Number: 5538-94-3

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Physical/Chemical Characteristics

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Appearance And Odor: CLEAR BLUE LIQUID W/A PLEASANT SASSAFRAS ODOR.
Boiling Point: 212F
Vapor Pressure (MM Hg/70 F): AS WATER
Specific Gravity: 1.01

Evaporation Rate And Ref: (WATER =1): 1
Solubility In Water: COMPLETE

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Fire and Explosion Hazard Data

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Flash Point: NONE TO BOILING
Flash Point Method: TCC
Special Fire Fighting Proc: NONE
Unusual Fire And Expl Hazrds: NONE

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Reactivity Data

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Stability: YES
Cond To Avoid (Stability): DON'T MIX W/CLEANING CHEMICALS.
Materials To Avoid: STRONG OXIDIZING/REDUCING AGENTS.
Hazardous Decomp Products: AMMONIA, NITROGEN OXIDES.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NONE

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Health Hazard Data

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Route Of Entry - Inhalation: NO
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
IRRITATION TO MUCOUS MEMBRANES. INGESTION: SEVERE IRRITATION TO MOUTH, THROAT, GI TRACT. CIRCULATORY SHOCK & RESPIRATORY DEPRESSION.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE
Signs/Symptoms Of Overexp: REDNESS, TEARING, IRRITATION, BURNING IN MOUTH, THROAT, ABDOMEN, CIRCULATORY SHOCK, CONVULSIONS.
Med Cond Aggravated By Exp: DERMATITIS.
REMOVE TO FRESH AIR. SKIN: WASH W/MILD SOAP & WATER. OBTAIN MEDICAL ATTENTION IN ALL CASES. INGESTION: DON'T INDUCE VOMITING. GIVE PROMPTLY LARGE QUANTITIES OF EGG WHITES/GELATIN SOLUTION. IF UNAVAILABLE, DRINK LARGE QUANTITIES OF WATER. AVOID ALCOHOL. OBTAIN MEDICAL ATTENTION IN ALL CASES. NOTE TO PHYSICIAN: (SEE SUPP)

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Precautions for Safe Handling and Use

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Steps If Matl Released/Spill: MOP UP/ABSORB/USE SOLID ABSORBENT & SHOVEL INTO CONTAINERS FOR DISPOSAL.
Waste Disposal Method: DISPOSE OF IAW/FEDERAL, STATE & LOCAL REGULATIONS.
Precautions-Handling/Storing: KEEP CONTAINER CLOSED WHEN NOT IN USE. DON'T REUSE EMPTY CONTAINER.
Other Precautions: KEEP AWAY FROM FOOD & WATER SUPPLIES. OPEN DUMPING IS PROHIBITED.

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Control Measures

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Ventilation: MECHANICAL (GENERAL) IS SUFFICIENT
Protective Gloves: RUBBER/NEOPRENE
Eye Protection: GOGGLES
Other Protective Equipment: NONE

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Transportation Data

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Disposal Data

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Label Data

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Label Required: YES
Label Status: G
Common Name: FK300 SPECIAL RESPIRATOR CLEANER
MAY CAUSE IRRITATION OF LUNGS & AIRWAYS. IRRITATION, STOMACH DISTRESS.
Label Name: GEORGIA STEEL & CHEMICAL CO INC
Label Street: 10810 GUILFORD RD BAY 104

SER Publications Group Leader Meeting
GNV - Founders Conference Room
Agenda

Thursday, April 15

8:00 Feedback from BSG Managers' Mtg, PubsNet, etc.

8:45 Overhead Budgets

9:15 Workload / Staffing

10:00 Break

10:15 Attract, Develop, Retain
- Business Services Team Goal
- Training
  - 1999 Budget
  - Identification/prioritization of needs
- Recognition
- Communication
- Orientation/Mentoring
- Career Development
- Burnout

12:00 Lunch - Crow Conference Room

1:00 Group Leader Breakout Session
- Draft a Publications ADR communication plan

2:00 Breakout Session Report

3:00 Break

3:15 Technology and Tools
- Saros - Develop a strategy for SER Publications
- Publications Shared Applications List
- Graphic Indexing System
- File management practices

5:00 Adjourn

8:00 Dinner

Agenda

Friday, April 16

8:00	Information Mining Presentation
9:00	Business Acquisition Center Roles - BAC vs SER Publications Work sharing opportunities
10:00	Break
10:15	BD Coordinator Round Table
12:00	Lunch with GNV Publications - Founders Conference Room
1:00	New Job Classifications
2:00	SER Publications Web Site
3:00	Plan Future GL Meetings
3:30	Adjourn