WORK PLAN BUILDING 3904 SITE REMEDIATION MCAS CHERRY POINT NC

1/11/1999

MCLAREN/ HART, INC.

Work Plan Building 3904, Site Remediation MCAS, Cherry Point, North Carolina

Department of the Navy,
Atlantic Division
Contract No. N62470-93-D-3033
Task Order No. 63

SCIENCE • STRATEGY • TECHNOLOGY • SOLUTIONS

WORK PLAN
T.O. # 0063

PIT 15, Site Remediation

Department of the Navy, Atlantic Division
Contract No. N62470-93-D-3033
POLRAC
Marine Corps Air Station, Cherry Point
North Carolina

November 11, 1999

Project No. 946363

Prepared for:

J. A. Jones Environmental Services
6135 Park South Drive, Suite 250
Charlotte, North Carolina 28210

Prepared by:

McLaren/Hart, Inc.
Two North Shore Center, Suite 100
Pittsburgh, Pennsylvania 15212

William A. Buccille, P.E.
Sr. Project Engineer

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

FIGURES

1.0 INTRODUCTION

McLaren/Hart, Inc. (McLaren/Hart), as a subcontractor to J.A. Jones Environmental Services Company (J.A. Jones), prepared this Work Plan for remediation of petroleum, oils and lubricants (POL) at the Building 3904 Site located at the Marine Corps Air Station (MCAS), Cherry Point, North Carolina. The site is at the location of a former 1000-gallon underground diesel storage tank that was used in association with a diesel-powered electrical generator. This Task Order primarily consists of excavation; staging and disposal of petroleum contaminated soils related to the former underground storage tank (UST). The scope of work includes Work Plan preparation, soil screening to guide the excavation, verification sampling, backfill and grading, and installation and sampling of up to four monitoring wells.

This Work Plan has been prepared to present a summary of the proposed remedial construction activities and provide necessary supporting documentation to complete the work safely in accordance with applicable standards, rules and regulations. Work Plan Section of the Work Plan include the following:

- Section 1.0 -- Contains a brief description of the site conditions, project objective, work activities, and construction schedule;
- Section 2.0 – Contains the Sampling, Analysis and Testing Plan describing all sampling and analysis requirements for completion of the Task Order;
- Section 3.0 – Addresses Site specific Health and Safety issues for the project construction activities;
- Section 4.0 -- Contains contractor-generated construction drawings which detail project features.
- Section 5.0 – Presents a schedule for site remediation.

1.1 PROJECT BACKGROUND

1.1.1 Site History and Description

MCAS Cherry Point is located on the Atlantic Coastal Plain near the city of Havelock, Craven County, North Carolina. The base provides flight support and aircraft maintenance services for the Marine Corps. On-site activities include aircraft fueling, maintenance, and storing, engine testing, fuel storage and distribution and vehicle maintenance.

The Building 3904 Site is located on Slocum Road immediately west of the intersection with Roosevelt Boulevard near the Physical Training Parking Lot. The site is named for the former building located at this site. The site is a former 1000-gallon underground diesel storage tank that was used in association with a diesel-powered electrical generator.

Access to the site is directly from Slocum Road. The site is mostly open and generally flat. Some mature trees have developed in the rear of the site.

Near surface soils in the area are assumed to consistent with soils in nearby sites. Typically, soils are characterized as silts and fine sands. Some clayey lenses have been encountered in borings and excavations throughout the nearby sites. Groundwater in the upper aquifer is assumed to flow to the northwest toward Slocum Creek.

1.1.2 Site Environmental Conditions

In 1995 the 1,000-gallon UST was closed by removal at which time evidence of a release from the tank was documented. Following the release, four monitoring wells (79GW01 through 79GW04) were installed near the former UST location. Well 79GW02 was subsequently destroyed by construction activities at the site. Soil samples collected during the well installation exhibited TPH concentrations as high as 950 mg/kg. Groundwater samples were collected from the wells and tested by EPA Methods 602 and 625, however, EPA Method 602 and 625 compounds were not detected in the groundwater samples. Subsequent sampling of the

monitoring wells has also not detected the presence of EPA 602 and 625 compounds. However, free product has been detected in Monitoring Well 79GW04 ranging from 0.43 to 0.44 feet thick. The source of the free product has not been determined. The absence of detectable hydrocarbons in groundwater collected from wells 79GW01 and 79GW03, which are within 15 feet of the product containing well, suggest the impact of free product on the groundwater is limited in size.

This release has not been shown to threaten water supply wells, produce threats of explosion or imminent threat to public health or the environment. The nearest potential receptor is Slocum Creek, which is located approximately 200 feet north of the site.

1.2 ABATEMENT PLAN

1.2.1 Project Objectives

This plan has been developed to address two issues raised by the presence of free product. The objective of the plan is to remove free product from the subsurface in the vicinity of well 79GW04. To accomplish this, petroleum-laden soil near well 79GW04 will be excavated and disposed. Accumulations of free product in the excavation will be collected and disposed during the soil removal process. The belief is that, excavation of the petroleum-laden soil will remove the source of the free product measured in well 79GW04.

The soil zone targeted for removal will range from in depth below ground surface from approximately one foot below the seasonal low water table to two feet above the seasonal high water table. Based on the depth to water data, the soil targeted for removal will start at approximately 9 feet and extend to approximately 14 feet below the land surface.

Water quality conditions from wells 79GW01 and 79GW02 suggest that the lateral extent of the petroleum-laden soil does not extend beyond 15 feet from well 79GW04. For planning purposes, the lateral extent of the excavation will extend to a radius of 15 feet from well 79GW04. Therefore, the soil targeted from removal is located from 9 to 14 feet below the land surface

within a 15-foot radius of well 79GW 04. In practice, the excavation will begin at well 79GW04 and progress outward as necessary based on field observations and hydrocarbon screening. Clean overburden removed during the abatement will be placed back into the excavation. Petroleum-laden soil will be transported by truck to a disposal facility that is permitted by the North Carolina Division of Waste Management.

1.3 SCOPE OF WORK

McLaren/Hart will conduct the following work activities at the Building 3904 Site:

- SETUP/CONSTRUCT TEMPORARY FACILITIES AND SITE CONTROLS
- LOCATE UTILITIES
- EXCAVATION OF PETROLEUM-LADEN SOIL
- VERIFICATION SAMPLING
- BACKFILL OF EXCAVATION
- SITE RESTORATION
- DEMOBILIZATION
- INSTALL MONITORING WELLS
- REPORTING

Detailed discussions of the project work activities are presented in the sections that follow. Implementation of this Work Plan and remedial construction activities will be coordinated with the Resident Officer In Charge of Construction (ROICC), MCAS Fuels Department, and Environmental Affairs Department to minimize disruption of Air Station operations and to efficiently perform the required construction.

1.3.1 Setup/Construct Temporary Facilities and Site Controls

This task will consist of the mobilization of personnel and equipment to the work site and the setup of the temporary facilities, including equipment decontamination pad, clean soil stockpile, and potentially contaminated stockpile area. The soil stockpiles will be constructed so that excess water will be collected and drained directly back into the excavation. The McLaren-Hart

office trailer, equipment storage trailer, and material stockpile areas located in Tank Farm B will be utilized for this project. Any changes to the current facilities will be coordinated with the ROICC. A portable generator will be used to provide electric service for the work.

Prior to the start of intrusive work, the USMC's ROICC or the Construction Representative (ConRep) and McLaren/Hart's Site Superintendent will perform an Environmental Conditions Survey. The Environmental Conditions Survey will include taking photographs of existing structures such as pavement and sidewalks within the work areas, and discussing and noting existing conditions. This report will be submitted to the USMC and reviewed prior to site restoration activities.

Site controls such as construction barricades, security fencing, and sediment control features will be installed during this phase.

1.3.2 Locate Utilities

Prior to the commencement of excavation, a Level B underground utility survey will be conducted to horizontally locate within a tolerance of 2 feet all active and abandoned underground utilities in the work areas. The horizontal location of underground utilities will be determined using electromagnetic, magnetic, sonic and other energy fields. Utilities will be marked in the field with color-coded paint and flags.

1.3.3 Excavation of Petroleum-Laden Soils

The MCAS EAD office will be notified at least 48 hours prior to commencement of excavation activities.

McLaren\Hart personnel will supervise the excavation operations. Special care will be taken to detect evidence of known and undetected utilities. Prior to excavation, known utilities in the limits of the excavation will be exposed using hand excavation methods assisted with power

operated equipment. Power operated equipment will be maintained at least two feet away from known utilities.

The soil targeted from removal is located from 9 to 14 feet below the land surface within a 15-foot radius of well 79GW04. The excavation will begin by removing the soil to the groundwater table at well 79GW04 and progress outward as necessary based on field observations and hydrocarbon screening. Once the lateral extent of the petroleum-laden soil has been exposed, the excavation will continue below the water table. The excavation will be guided by visual observations and screened with an OVA or PID as it is removed from the excavation. It will not be necessary for personnel to enter the excavation for sampling or screening.

A track-mounted hydraulic excavator will be used to excavate the soil. A spotter will guide the operator as the excavation progresses. The end of the excavation will be ramped down to an intermediate bench approximately 5 feet below the land surface. From this bench, the excavator will more easily access the deeper areas of the excavation. As each bucket of soil is removed from the excavation, it will be visually characterized and/or screened prior to unloading into a temporary staging area adjacent to the excavation. A rubber-tired loader will transport each bucket of soil to the respective soil stockpile based on potential TPH contamination levels.

The area surrounding the excavation will be graded such that surface runoff does not readily enter the excavation. Standing water will not be removed from the excavation during excavation.

Clean overburden removed during the abatement will be stockpiled on site to be placed back into the excavation. Petroleum-laden soil will be transported by truck to a disposal facility that is permitted by the North Carolina Division of Waste Management and within the limits of the Fire Ant Quarantine.

In order to determine handling and transportation and disposal requirements, two soil samples will be collected from potentially POL contaminated soil removed from the trench and analyzed for TPH and disposal parameters as discussed in Section 2.0. Based on analytical results of the two soil samples, excavated soil will be direct loaded for transportation and disposal or stockpiled for later transportation and disposal or potential reuse, if clean. Soil with less than

100 ppm TPH shall be considered clean. Non-contaminated soil stockpiles, which will not be returned to the excavation by the end of the shift, will be covered with a single layer of 10 mil poly liner to minimize moisture content increases due to rainfall events. Concrete and asphalt pavement will be disposed as construction debris at the designated area on base.

Photographs and written documentation of the abatement procedures will be recorded.

1.3.4 Verification Sampling

Upon completion of the excavation, eight (8) verification samples will be obtained from each side and bottom of the excavation. The samples will be transported to a laboratory where they will be analyzed by EPA Methods 8260 and 8270 plus MDEP. Soil samples with detectable levels (above laboratory "Method Detection Limit") of petroleum contamination must be disposed at a permitted facility.

1.3.5 Backfill of Excavation

Upon receipt of satisfactory verification sample results, the excavation will be backfilled to the land surface with clean fill. Immediately prior to placement of backfill material, standing water will be removed from the excavation by pumping prior to placing materials or backfilling. Water from uncontaminated areas will be filtered and discharged into existing surface water facilities.

The initial two to three foot of the excavation will be backfilled with clean granular material. The granular fill will be compacted with the excavator bucket to the extend practical to provide a suitable base for successive layers of clean soil fill. Clean soil removed from the excavation will be used as backfill and will be supplemented by off-site borrow material. Backfill will be placed in 8-inch thick loose lifts and compacted using a remote-controlled double drum sheep's-foot compactor. Backfill will be compacted to 85 percent of the Standard Proctor Maximum Dry Density. Soil within 5 feet of the ground surface will be compacted to 90 percent of the Standard Proctor maximum dry density. In place density will be field verified using nuclear density testing methods.

1.3.2 Site Restoration

Site restoration will include; resurfacing stockpile and temporary laydown areas with gravel; and seeding of non-paved areas and other contractor-disturbed areas, as necessary. Pavement will be replaced in kind and will match adjacent existing surfaces to the extent practical. Seeding of non-paved areas will be in accordance with the *North Carolina Erosion and Sedimentation Control, Planning and Design Manual.*

1.3.3 Demobilization

Once the contaminated soil is loaded and transported from the site, McLaren/Hart will demobilize from the site. During demobilization, temporary facilities, utilities and equipment will be removed from the site. In addition, any debris or litter remaining from construction activities will be removed.

1.3.4 Install Monitoring Wells

Several existing monitoring wells may be destroyed during excavation activities. At the conclusion of site remediation, the monitoring wells destroyed during previous construction activities and petroleum-laden soil excavation will be replaced. The recovery wells will be installed to a depth of approximately 25 feet below the ground surface and will be constructed of 2-inch diameter, threaded Schedule 40 PVC with .020 inch slotted screen. The monitoring well heads will be housed within flush-mounted 12-inch diameter vaults with bolt-down lids designed to withstand an AASHTO H20 vehicle load. The vaults will be set in concrete.

During monitoring well installation, drill cuttings will be collected and handled in a similar manner as the excavated soil. Well development water will be collected and disposed in the Building 4075 Treatment System. Another option may be disposal in an oil/water separator on the Air Station which flows into the MCAS Cherry Point Industrial Wastewater Treatment Plant (IWTP). The EAD will be contacted to coordinate the location of the oil/water separator to be

used for this purpose. Sediments and gross amounts of free product will be removed before disposal in the designated oil/water separator. Sediment will be stockpiled in the contaminated soil stockpile at the site.

Well construction records will prepared and forwarded to MCAS Environmental Affairs Department for submittal to the North Carolina Department of Environment, Health and Natural Resources (NCDEHNR).

All monitoring wells will be constructed in accordance with North Carolina Title 15A, Subchapter 2C regulations. Each well will have an identification tag installed upon completion. The tag will list the following items:

- Drilling contractor name and registration number
- Date well was completed
- Total well depth
- Depth to screen
- Well number (as provided by EAD)
- Warning statement "Not for Potable Use or Disposal"

Following installation and development of the monitoring wells, groundwater samples will be collected from each of four wells and analyzed for EPA Methods 602 and 625 (610 analytes) plus MDEP.

1.3.5 Construction Close-out Report

A Construction Closeout Report will be prepared and submitted to the Navy following the construction phase of the project. This report will include the following:

- Introduction;
- Summary of Action;
- Photographs of the Abatement Procedures
- Health and Safety Summary;
- Summary of Record Documents;
- Summary of Field Changes;

- Contract Modifications;
- Final Documents;
- Results of Field Test and Laboratory Analyses;
- Off-Site Transportation and Treatment of Materials; and
- QC Summary Report.

A proposed table of contents will be forwarded to LANTDIV and MCAS for review and approval after completion of construction activities and prior to preparation of the report.

1.4 PROJECT SCHEDULE

Work activities will be completed in accordance with the Construction Schedule included as Appendix A. In summary, construction activities will be completed as follows:

- SETUP/CONSTRUCT TEMPORARY FACILITIES 0.5 DAY
- LOCATE UTILITIES 0.5 DAY
- EXCAVATION OF PETROLEUM-LADEN SOIL 2 DAYS
- VERIFICATION SAMPLING 3 DAYS
- BACKFILL OF EXCAVATION 1 DAY
- SITE RESTORATION 0.5 DAY
- DEMOBILIZATION 0.5 DAY
- INSTALL MONITORING WELLS 2 DAYS
- REPORTING 5 DAYS

2.0 SAMPLING, ANALYSIS AND TESTING PLAN

This Plan outlines the required sampling, analysis and testing of soil, water, construction debris, and construction materials for the completion of T.O. 0063.

The following sections provide detailed discussions and procedures for sampling, analysis, and testing for T.O. 0063. Section 2.1 details the required analytical testing of soil, water, and construction debris samples for chemical constituents. Section 2.2 details the required physical testing of construction materials.

2.1 CHEMICAL SAMPLING AND ANALYSIS

This plan has been developed in accordance with the requirements of the following documents:

- Statement of Work, Building 3904 Site Remediation,
- [CAP] Corrective Action Plan, Pit 15, Volume IV, Marine Corps Air Station, Cherry Point, North Carolina, Law Engineering, Inc., Raleigh, North Carolina, Project No. 30740-5-0500/Phase 0200, May 20, 1998.
- [State Guidelines] Groundwater Section Guidelines For The Investigation and Remediation of Soils and Groundwater, North Carolina Department of Environment, Health, and Natural Resources, Division of Environmental Management, Groundwater Section, June 1993.

Based on the statement or work prepared for the site, the soil is contaminated with petroleum hydrocarbon compounds resulting from high boiling point fuels (principally related to diesel historically handled at the site).

Sampling and analysis for T.O. 0063 is summarized in Table 2-1. The following sections detail the required sampling and analysis. Note that, in some instances, the CAP, State Guidelines, and

Technical Specifications have differing requirements. In such instances, the Sampling and Analysis Plan followed the requirements of the CAP. Similarly, the State Guidelines were given precedence over the Technical Specifications.

2.1.1 Sampling Strategy

The goal of this sampling program is to collect representative samples of the media to be analyzed. The personnel responsible for the sampling activity will investigate and understand the need for, and requirements of, the sampling program.

The following strategies have been identified for soil, water, and construction debris sampling for T.O. 0063:

- Soil confirmation sampling: Upon completion of excavation of petroleum-laden soil, a total of eight (8) confirmation samples will be obtained from the sides and bottom of the excavation. Soil samples will be analyzed by EPA Methods 8260 and 8270.

- Soil Disposal Sampling: Soil disposal sampling will be completed by collecting composite soil samples from soil stockpiled as a result of drilling and trenching activities. Disposal sampling will be completed following stockpiling because contaminated soil will not be generated at a rate to facilitate direct loading. If no sign of contamination is detected by field observation, the soil will be utilized as backfill with no further testing. Soils contaminated with any detectable levels (above laboratory "Method Detection Limit") of petroleum contamination must be properly treated and disposed at a permitted facility. Analytical testing parameters will be based on disposal facility requirements and are expected to include TPH/GRO, TPH/DRO.

- Groundwater Sampling: Groundwater sampling will be completed by collecting water samples from four (4) new and existing monitoring wells at the site following completion f contaminated soil _____ activities. Water samples will be analyzed by EPD Methods 602 and 625 (for 610 analytes list), plus MEP.

- Waste Water Sampling: Petroleum contaminated water generated during construction activities which includes water that is generated from decontamination activities, rainwater removed from excavations, well development and well purge water, will be containerized and sampled for characterization and disposal parameters required by the disposal facility. The proposed method of contaminated water disposal would not require testing (disposal through the Station IWTP). If off-site disposal were necessary EPA Method 610 (or 610 analyses by Method 625), in addition to Method 602, would be performed on the contaminated water. Non contaminated or only

slightly contaminated water that is generated from decontamination activities, rainwater removed from excavations, well development and well purge water, may be disposed in close proximity of the site when the water is allowed to infiltrate into the soil surface with no runoff to surface waters.

- Quality Control Samples: Quality Control (QC) samples will be collected during each groundwater and surface water-sampling event. QC samples will include trip blanks, sampling equipment rinsate blanks, and duplicates. QC samples will be analyzed by the same methods as other samples.

2.1.2 Sampling Methodologies

The laboratory will provide sample containers to perform the analysis. Consistent with State Guidelines, the samples will preferably be placed in glass containers. The laboratory will also provide shipping containers and custody seals for each shipping container. The laboratory will be responsible for determination of required sample volume. The laboratory will be responsible for determination and supply of preservatives, including any limitations on airfreight shipping. Sample containers will be kept closed until immediately before placement of the sample into the container.

Collection of samples will be completed by personnel wearing unpowdered, disposable gloves constructed of Latex or Nitrile. A new pair of disposable gloves will be worn each time a different location is sampled. and gloves will be donned immediately prior to sampling. Samples will be directly placed in sample containers whenever possible. The samples will be immediately placed into an environment maintained at 4 degree Celsius (*i.e.*, cooler with ice or refrigerator).

Collection equipment and monitoring instruments will be constructed of Teflon, stainless steel, or glass that has been decontaminated prior to use by the procedure identified on Figure 2-1.

Collection of water samples will involve special handling of septum-sealed vials (*i.e.*, VOC sample containers). The vial will be filled so that the sample surface is above the container rim (*i.e.*, convex meniscus) and the lid quickly applied so there are no air bubbles. Extreme caution will be exercised when filling the vial to avoid any turbulence which could produce

volatilization. The sample will be carefully poured down the side of the vial to minimize turbulence. If air bubbles occur, the lid will be removed, additional sample added and the lid re-applied (and repeated until no air bubbles are present).

Wastes (*i.e.* gloves, disposable sampling equipment, decontamination fluids, purge water, etc.) generated by sampling efforts will be collected and disposed of in accordance with the Waste Stream Management Plan in Section 3.0.

2.1.2.1 Samples for Waste Characterization

Waste sampling as discussed in this section includes soil and water samples as related to characterization of materials for disposal (including recycling and/or reuse). The intent of the sampling effort will be to take all reasonable efforts to obtain a representative sample of the waste for characterization by analysis.

SOIL PROCESS SOLIDS/SLUDGES

Stockpile soil samples will be collected by using decontaminated sampling equipment. The sample will then be collected by hand with disposable gloves donned immediately prior to collecting the sample or by using equipment decontaminated prior to collecting the sample. Collect 3 soil samples from each of two borings for every 200 cubic yards of soil to be sampled (total of 6 separate sampled for each 200 cubic yards of soil). The 6 separate samples shall be shipped to an approved laboratory for analysis. **NOTE:** The North Carolina Groundwater Section Guidelines for the Investigation and Remediation of Soil and Groundwater, Volume II, Petroleum Underground Storage Tanks, January 2, 1998 requires that the six primary samples be commingled in the laboratory under controlled conditions to prevent VOCs from escaping in the field. Sample containers will be filled completely and compacted so that no headspace remains in the sample container. The container rim will be cleaned of soil and particles so the lid can be sealed and the outside of the container will also be cleaned.

- For soil in roll-offs, grab samples will be taken at six locations and composited into one sample. The six locations will be selected so that each location is representative of approximately 1/6 of the pile volume.

- For soil in drums, one grab sample will be collected from each drum and composited. Note that closed drums shall be accessed using non-sparking techniques and tools. If more than five drums of waste soil are present, five representative drums (for every 25 drums or portions thereof) will be selected and one sample from each of those drums will be grabbed. Each sample shall be sent to a certified laboratory to be composited under controlled conditions.

WATER

When necessary, water samples will be collected and analyzed for disposal parameters from decontamination, run-on, and well wastewater. Water samples will be collected by using decontaminated sampling equipment capable of removing a sample at the water surface. Typically, the sample will be collected using a disposable bailer. Sample collection will be completed by directly pouring from the sampling device into the sample container without allowing the device or hands to touch the rim of the sample container. Each sample container will be filled as completely as possible with a minimum of 90 percent of the container filled (note VOAs to be completely filled per the procedure outlined in Section 2.1.2). The sample container lid will be immediately placed and tightened.

Collection of the sample will involve special circumstances in the following situations:

- In the event free phase product is present at the sampling location (and in the event product will be disposed separately from the water); absorbent materials will be applied to the liquid surface to allow the collection device to penetrate the water column without contacting product. Also, the sampling will be completed at least 24 hours since the last disturbance of the liquid (*i.e.* last addition of liquid to the holding tank, etc.) to allow sufficient time for product/water decanting.
- For water in drums, one grab sample will be collected from each drum. Note that closed drums shall be accessed using non-sparking techniques and tools. Individual grab samples will be of the same volume (typically be in the range of 16 to 32 ounces) and will be combined to form a composite sample. The composite will be thoroughly mixed/combined by stirring. If more than five drums of water are present, five representative drums will be selected and one sample from each of those drums will be grabbed and composited into one sample.
- For in-situ water sampling along open excavations, one sample composite will be collected for every 5,000 gallons of water. Each composite sample will involve 5 grab samples collected from the ends and quarter points along the trench.

2.1.3 Sample Handling

Handling of sample containers after completion of sampling will be minimized. Sample containers will be placed into shipping containers as soon as possible. Sample containers will be placed in plastic bags prior to placement into shipping containers. Packing will be provided between containers to avoid breakage. Shipping containers will be sealed with strapping tape to avoid tampering during transport to the laboratory. If shipped by common carrier, documentation (*i.e.*, chain of custody, etc.) will be placed in a sealed plastic bag taped to the inside of the shipping containers.

Samples will be maintained at approximately 4 degrees Celsius during shipping. Shipping containers will be insulated coolers and packed with wet ice (dry ice, blue ice, or chemical cooling packs will not be used). Samples will be delivered or shipped to allow for receipt at the laboratory within 24 hours of packaging.

Samples will typically be considered non-hazardous substances and will be transported to the laboratory by commercial shippers (*i.e.*, Federal Express, U.S. Mail, etc.) or directly delivered if the laboratory is within a one-hour drive of the site. Shipping labels for non-hazardous substances will identify the samples as "soil/water/air samples".
Samples are not expected to be hazardous substances. If the sample is known, or expected to be a hazardous substance, a sample specific protocol will be developed prior to sample transport. The specific protocol will be in accordance with the requirements of DOT regulations for hazardous materials per 49 CFR Parts 110-119.

The following criteria will be used to determine whether a sample is to be considered a hazardous substance:

- Any sample with visible free phase product, whether a liquid sample with segregated free phase or solid with visible adsorbed free phase, will be considered hazardous.
- Sludges or other residual contents of tanks or other vessels will be considered hazardous.

- Any sample from an area or waste stream known (based on analytical results from prior sampling events) to be RCRA-hazardous per criteria of 40 CFR Part 261 (*i.e.* ignitability, corrosivity, reactivity, or toxicity characteristic) will be considered hazardous.
- Any sample suspected (in judgment of sampler based visual, nasal, or other observed characteristics) to be RCRA-hazardous per criteria of 40 CFR Part 261 will be considered hazardous.

2.1.4 Analytical Methods

Analytical testing will be completed per methods identified on Table 2-1. Note that the methods are consistent with the State Guidelines. State Guidelines require TPH to be analyzed by the California GC-FID Method. Also, State Guidelines require a specific filtration procedure by the laboratory prior to analysis of water samples for lead.

2.1.5 Field Sampling Quality Control

Quality control samples will be collected during each sampling event as required by the CAP. QC samples will include trip blanks, sampling equipment rinsate blanks, and duplicates. QC samples will be collected only for events associated with performance of the treatment system (*i.e.* groundwater and surface water sampling events). QC samples will be analyzed by the same methods as other samples.

Quality control of field measurements will include calibration at the start of each sampling day of all field equipment in accordance with equipment manufacturer's recommendations. In addition sample labeling, field documentation, and collection procedures will be observed and reviewed by the site superintendent.

2.1.3.1 Sample Labels

All sample containers will be labeled in advance of sampling activities. The sample label will include a unique sample identification number. 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 completed by the laboratory. The sample identification number will be of the following form:
Task Order - Location - Matrix (liquid(L) or solid/soil(S) or gas(G))

For example, a sample collected under task order number TO # 0063 of groundwater from monitoring well MW-1 would have the following identification number:
TO#63-GW3-L

2.1.3.2 Sample Custody and Handling

A chain-of-custody record will be completed for each shipping container of samples. The chain-of-custody record will typically be completed on a carbon-copy form provided by the laboratory. The record will, at a minimum, contain the following:

- Site name and address;
- Full name of sampler;
- Sample identification number for each sample;
- Date and time of collection for each sample;
- Sample matrix (liquid, solid, gas);
- Number of containers for each sample;
- Description of sample location for each sample;
- Required analyses for each sample;
- Preservation for each sample;
- Notation whether samples shipped with or without ice;
- Notation if sample is expected to be highly contaminated;
- Signature of person(s) involved in chain of possession; and,
- Transfer date(s) and time(s) in chain of possession.

The preparer of the chain-of-custody form (*i.e.*, sampler) will retain a copy of the form and attach the form to daily field logs for the project.

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 and the shipping container secured with strapping tape and a custody seal. Thus, in the case of the common carrier, two signatures will occur on the final chain-of-custody - one signature by the preparer of 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 denote any breaks to the custody seal of the shipping container and/or damage to the shipping container or sample containers on the chain-of-custody-form - analyses will not be completed if sample seals are compromised.

2.1.3.3 Field Documentation

A Field Activity Daily Log form (FAL) will be completed for each day of sampling. A copy of the form is provided on Figure 2-2. The FAL 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 FAL's will be placed in the project file at the completion of each sampling event. The daily FAL will index and will have attached all other paperwork generated associated with the sampling including well purge logs, equipment calibration sheets, sampling analysis request forms, chain-of-custody forms, and shipping receipts. All information related to the sampling event will be either entered on the FAL or on attached forms. Any extraneous written information not noted on the FAL or attached forms will be attached to the daily FAL.

A single responsible party for field documentation will be designated whenever feasible. For multi-person sampling teams, the party responsible for documentation will be focused on the field documentation effort (*i.e.*, FAL and related forms) and will not be a hands-on participant in collection of samples. The field documentation will include sufficient detail so that the history of each sample is clearly evident from the retained record. Logging of field data will vary widely depending on actual sampling situations. The general intent of logging will be to record sufficient information so that anyone can reconstruct the sampling without reliance on the collector's memory. Data will typically include a detailed description of equipment

decontamination procedures, equipment calibration procedures, preparatory purging at each location, inventory of all generated wastes, and disposition of all generated wastes.

A copy of the FAL included all attachments, will be attached to the Daily Production Report for the work.

2.1.6 Laboratory QA/QC

The laboratory will be certified with the Navy in accordance with NEESA 20.2-047B. An acceptable substitute for Navy approval according to NEESA 20.2-047B will be current certification and participation in the USEPA Contract Laboratory Program (CLP) or certification by the U.S. Army Corps of Engineers for environmental work. Evidence of pertinent certification will be provide by the laboratory prior to completion of any work. At the request of the ROICC or NTR a local laboratory may be used.

The laboratory will also be certified with the North Carolina Department of Environment, Health, and Natural Resources for the analyses to be performed.

QC checks (method blanks, matrix spikes, etc.) will be completed at frequencies established by the test method or the laboratory QA/QC Program, whichever is more stringent. QC checks run by the laboratory concurrent with the analysis of samples will be reported along with the sample results.

2.1.6.1 Laboratory Management of Samples

The laboratory will assign a sample custodian to receive samples. The sample custodian will open the shipping container and denote any damage to 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 the sample and reconcile the information on the sample label with the chain-of-custody record. The custodian will assign a laboratory number to each sample (to be denoted on the chain-of-custody), log in the sample in the laboratory logbook, and store the

sample in a secured storage room or cabinet until assigned to an analyst for analysis. The sample shall be stored at conditions (*i.e.* 4 degrees Celsius if appropriate, etc.) and for maximum holding times identified by 40 CFR 136 (USEPA "Guidelines Establishing Test Procedures For The Analysis Of Pollutants).

The custodian will immediately contact the person completing the chain-of-custody in the event the seal on the shipping container is broken, any discrepancies between the chain-of-custody and sample labels are noted, or any sample container is damaged. Any problems noted by the sample custodian will be resolved with the sampler before the sample is assigned for analysis.

Once the sample is received by the analyst, that person is responsible for its care and custody and that person should be prepared to testify that the sample was in his/her possession, or secured in the laboratory at all times until the analysis was performed.

2.1.6.2 Sample Disposal

The laboratory will dispose of all samples in accordance with the requirements the USEPA. The laboratory will be responsible for determination of whether each individual sample is "hazardous" or "non-hazardous" based upon guidelines established in 40 CFR 260. If deemed a hazardous waste by the laboratory, the sample and sample container will be disposed of at a facility permitted in accordance with the requirements of 40 CFR 264. If deemed a non-hazardous waste by the laboratory, the sample and sample container will be disposed of a solid waste at a facility permitted in accordance with 40 CFR 257.

2.1.6.3 Equipment Decontamination

The laboratory will decontaminate equipment in accordance with procedures established in the QA/QC Program which served as the basis of their certification identified in Section 2.1.3.

2.2 CONSTRUCTION MATERIALS SAMPLING AND TESTING

2.2.1 Backfill and Fill Material Testing

Backfill material test data will be submitted for approval prior to installation of backfill material. Testing reports will be supplied by the material distributor when backfill material is purchased. Where excavated material is used a sample will be collected and shipped to soils laboratory for physical testing. Fill and backfill material will be tested in accordance with ASTM D-698, Standard Proctor Density Using Standard Compactor Effort

Density tests will be performed on in place backfill material in accordance with ASTM D-2992 Density of In-Phase Soil by Nuclear Methods. Field tests will be performed by a qualified technician. Factory and field tests will be completed in accordance with Section 02220, of the Technical Specifications, except in place density testing will be performed by Nuclear Methods; sand cone verification tests will not be performed. Granular backfill materials including gravel and sand will be compacted to non-movement.

Figure 2-1 - Equipment Decontamination Procedure

Definitions

Acid	10 % (minimum) nitric or hydrochloric acid solution. Solution to be made from reagent grade acid and deionized water. Typically to be provided by laboratory supplying sample container.
Tap Water	Tap water from any municipal water treatment system. Bottled distilled water is an acceptable alternate. Water from an untreated potable water supply is not an acceptable alternate.
Deionized Water	Water containing no heavy metals or other inorganic compounds at or above analytical detection limits as determined by an inductively coupled Argon Plasma Spectrophotometer (ICP) Scan. Typically, to be tap water treated by a standard deionizing resin column and provided by the laboratory supplying sample containers.
Detergent	Alquinox or Liquinox. Alternate brands of phosphate-free laboratory detergents are acceptable.

Organic-Free Water Deionized water containing no extractable organic compounds (or pesticides or herbicides) and less than 5 µg/l of purgable organic compounds as measured by a low-level GC/MS scan. Typically to be water treated by activated carbon (and deionizing unit) and provided by the laboratory supplying sample containers.

Solvent Pesticide-grade isopropanol. Alternately, pesticide-grade acetone (alternate since potential analyte in many situations) or methanol (alternate since more hazardous than isopropanol or acetone).

Decontamination Procedure

Step #1 -- Detergent Wash

- Wash thoroughly using brush and detergent solution (preferably made with hot tap water) to remove particulate matter.
- Equipment contaminated with oil, grease, or other hard to remove materials to be rinsed several times with solvent and/or steam cleaned if necessary.

Step #2 -- Tap Water Rinse

Step #3 -- Acid Rinse (Optional)

- Skip this step if using stainless steel or metal sampling equipment and for field instruments.
- Skip this step for field decontamination (*i.e.* only complete during off-site decontamination)
- Small and/or awkward equipment to be soaked if necessary to ensure thorough rinse.

1. Base regulations and restrictions covering operation of steam and hot water separators will be followed.

Step #4 -- Tap Water Rinse (Optional)

- Skip if skipped Step #3.

Step #5 -- Deionized Water Rinse

Step #6 -- Solvent Rinse

- Rinse twice for field decontamination operations.

Step #7 -- Air Dry For 24-Hours & Aluminum Foil Wrap

- If 24-air dry not practical, rinse thoroughly with organic-free water and allow to air dry as long as possible. If organic-free water is not available, do not rinse with deionized or distilled water.

Step #8 -- Tap Water Rinse

- Rinse thoroughly in field as soon as possible after use.

TABLE 2.1
SAMPLING AND ANALYSIS SUMMARY

Work Phase	Sample Description			Sampling		Analysis	
	Media	Type	Description	Frequency	Estimated Total Event Number	Analytes	Method
Excavation	Solid	Soil	Confirmation	1 event	8	Total Petroleum Hydrocabons	EPA Method 8260, EPA Method 8270
Well Installation	Water	Groundwater	Monitoring Wells. per CAP	1 event	4	Purgeable Aromatic Hydrocarbons Polynuclear Aromatic Hydrocarbons	EPA Method 602 + Xylenes EPA Method 610 (or 610 analytes by method 625), Plus MDEP
Quality Control Samples [2]	Water	Blanks	Trip Blanks (typically 1 cooler per event)	1 / Cooler	1	Purgeable Aromatic Hydrocarbons Polynuclear Aromatic Hydrocarbons	EPA Method 602 + Xylenes EPA Method 610 (or 610 analytes by method 625), Plus MDEP
			Field-Cleaned Equipment Blanks	10% (minimum 1/event)	1	Purgeable Aromatic Hydrocarbons	EPA Method 602 + Xylenes EPA Method 610 (or 610 analytes by method 625), Plus MDEP
			Duplicates	10% (minimum 1/event)	1	Purgeable Aromatic Hydrocarbons Polynuclear Aromatic Hydrocarbons	EPA Method 602 + Xylenes EPA Method 610 (or 610 analytes by method 625), Plus MDEP

[2] Quality Control Samples are assumed to only be required for samples collected during groundwater/surface water sampling events.

3.0 SITE HEALTH AND SAFETY PLAN

3.1 INTRODUCTION

McLaren/Hart, Inc. (McLaren/Hart), subcontractor to J. A. Jones Environmental Services Company (J.A. Jones), is submitting this Site Health and Safety Plan (SHSP) for the remediation of petroleum, oil, and lubricant (POL) contaminated soils at the Building 3904 Site, Marine Corps Air Station (MCAS), Cherry Point, North Carolina. This SHSP contains procedures and protocols pertaining to personnel and public health and safety issues at the site. It is through the implementation of this plan, along with *J.A. Jones Safety Program and Procedures Manual*, that site hazards and risks with regard to remediation activities will be controlled and minimized.

I hereby certify the SHSP shown and marked in this submittal is that proposed to be incorporated into Contract No. N62470-93-D-3033, is in compliance with the Contract Specifications, and is submitted for government approval. Government approval of proposed variation, if any, is recommended.

Certified by CIH _____ Date _____

(Julie Panko, CIH)

3.1.1 Health and Safety Program Maintenance

McLaren/Hart recognizes that health and safety concerns continually change at sites. Therefore, this plan will be reviewed periodically and otherwise as needed. At this time, the Site Health and Safety Officer (SHSO) will conduct a safety audit to check SHSP compliance and to see if the SHSP requires additional revisions. Additionally, in the event of an emergency response, the response will be evaluated as to its effectiveness, and revisions to the Contingency Plan will be made if necessary.

3.1.2 Plan Acceptance

All McLaren/Hart personnel and subcontractors engaged in site activities involving contact with or handling of potentially contaminated materials will be required to review this plan prior to the commencement of work. These individuals will be required to sign their name, indicating that they have read this plan and will comply with the rules, practices, and procedures contained herein. The Site Health and Safety Plan Acceptance form is included here as Figure 5-1.

3.1.3 Terminology

The following is a list of the terminology that are used throughout this SHSP:

ACGIH	-	American Conference of Governmental Industrial Hygienists
ANSI	-	American National Standards Institute
APR	-	Air Purifying Respirator
BTEX	-	Benzene, Toluene, Ethylbenzene and Total Xylenes
CFR	-	Code of Federal Regulations
CIH	-	Certified Industrial Hygienist
ConRep	-	Construction Representative
CPR	-	Cardiopulmonary Resuscitation
CRZ	-	Contamination Reduction Zone
EAD	-	Environmental Affairs Department

EZ	-	Exclusion Zone
Intrusive Activity	-	Type of construction activity where potentially contaminated materials may be encountered
J.A. Jones	-	J. A. Jones Environmental Services Company
LEL	-	Lower Explosion Limit
LEPC	-	Local Emergency Planning Committee
MSDS	-	Material Safety Data Sheet
MSHA	-	Mine Safety and Health Administration
NIOSH	-	National Institute of Occupational Safety and Health
NOSC	-	Navy On-Scene Coordinator
NTR	-	Naval Technical Representative
OSHA	-	Occupational Safety and Health Administration
OVD	-	Organic Vapor Detector
McLaren/Hart	-	McLaren/Hart Services, Inc.
PEL	-	Permissible Exposure Limit (8-hour time weighed average)
POL	-	Petroleum, Oils, and Lubricants
ppb	-	Parts per billion
PPE	-	Personal Protective Clothing and Equipment
ppm	-	Parts per million
ROICC	-	Resident Officer in Charge of Construction
SHSO	-	Site Health and Safety Officer
SHSP	-	Site Health and Safety Plan
SZ	-	Support Zone
TPH	-	Total Petroleum Hydrocarbons
USEPA	-	U.S. Environmental Protection Agency
USCG	-	U.S. Coast Guard
USMC	-	U.S. Marine Corps
USN	-	U.S. Navy

3.1.4 References

The following documents were used as references in the preparation of this SHSP:

- Standard First Aid Manual, American Red Cross
- OSHA Safety and Health Standards, 29 CFR 1910 and 1926 (specifically 1926.65)
- Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, NIOSH/OSHA/USCG/USEPA
- A Guide to Industrial Respiratory Protection, NIOSH
- Standard Operating Safety Guides, USEPA
- Occupational Health Guidelines for Chemical Hazards, NIOSH/OSHA
- Threshold Limit Values and Biological Exposure Indices, ACGIH
- Safety and Health Requirements Manual, EM-385-1-1, October 1992, US Army Corps of Engineers
- Hazardous Chemicals Desk Reference, Third Edition, Van Nostrand-Reinhold
- Law Catlin, "Statement of Work Package for Subsurface Petroleum Remediation PIT 15" August 10, 1999.
- J.A. Jones Safety Programs and Procedures Manual, (Contract N62470-93-D-3033, POL Remedial Action)

3.1.5 Site History and Description

MCAS Cherry Point is located along North Carolina's Atlantic Coast approximately 30 miles northeast of MCAS Camp Lejeune.

The primary contaminant source includes the reported leak of diesel oil from abandoned UST near the former Building 3904.

3.2 SITE HEALTH AND SAFETY PERSONNEL

Site safety is accomplished through an integrated team effort. The health and safety personnel, supervisors, site workers and administrative team all perform essential safety roles. The following sections outline the work team's respective responsibilities and training requirements and identify key personnel.

3.2.1 Certified Industrial Hygienist

The CIH for this project is J. Panko. She possesses the necessary experience in the health and safety aspects of remedial action projects. She will oversee the Health and Safety Program and will be available for consultation when required; however, she will not be required to be on site.

3.2.2 Site Health and Safety Officer

Implementation of the SHSP is the responsibility of the SHSO. Mr. Mark Boyd, McLaren/Hart's Project Superintendent, will be the acting SHSO. He possesses remedial action experience and a working knowledge of the state and federal occupational safety and health regulations. Mr. Boyd has spent a considerable amount of time working at USMC and USN facilities in the Atlantic Division on similar remediation projects during the past year. He has completed the required 40-hour health and safety training in accordance with 29 CFR 1910.120 and the 8-hour supervisory training. In addition, Mr. Boyd and one additional on-site McLaren/Hart professional employee will be trained in standard first aid and CPR. All training certificates and certifications will be retained at the site during the project. Mr. Boyd possesses demonstrable experience and has received specialized training in the use and selection of PPE and is familiar with the PPE implementation program. Furthermore, he has experience in the proper use of air monitoring instrumentation and sampling procedures relevant to the activities that will be performed during this project. The SHSO will be on site when work is in progress.

Mr. Boyd will contact the MCAS Fire Station, police, and ambulance services, as well as the nearest poison control center. He will communicate to these groups the following information: type of work being conducted, potential health and safety hazards present at the site, and duration of the project.

The Project Superintendent/SHSO will be in direct communication with the OSC, ROICC, ConRep., J.A. Jones personnel, and other site workers. It will be his responsibility to coordinate with these individuals regarding the health and safety aspects of the POL remediation activities.

A designated alternate SHSO and Project Superintendent will be named later. He or she will possess remedial action experience and a working knowledge of state and federal occupational safety and health regulations. He or she will have completed the required 40-hour health and safety training in accordance with 29 CFR 1910.120 and the 8-hour supervisory training. In addition, he or she will be trained in standard first aid and CPR.

3.2.3 Site Labor Forces

Site labor forces will be comprised of personnel within appropriate trade categories who possess the training and experience to work at a remedial site. Those who may be exposed to hazardous substances and/or potential health and safety hazards will have completed the 40-hour OSHA training and the required refresher training.

3.3 TRAINING REQUIREMENTS

3.3.1 OSHA 1910.120 Training

McLaren/Hart and subcontractors working on the site who may potentially be exposed to hazardous substances and/or potential health and safety hazards will have completed the 40-hour health and safety training and 8-hour refresher training as required by OSHA regulations, 29 CFR 1910.120. The SHSO will have completed the additional 8-hour supervisory training.

Visitors to the site who will not enter the exclusion zone (EZ) or contamination reduction zone (CRZ) (see Section 3.9) will not be required to complete the health and safety training; however, their activities will be monitored by an individual with health and safety training. All other visitors to the site must present current 40-hour or 8-hour refresher training certificates to the SHSO prior to entering the EZ or CRZ.

McLaren/Hart will maintain a record of training and refresher courses for all on-site McLaren/Hart and subcontractor personnel and a record of site personnel experience under the direction of a skilled supervisor (24 hours minimum). Also, a log of visitors to the site, including name, company name/organization, date, and activities conducted will be maintained at the site. Everyone entering the site will be required to sign the log. J.A. Jones will retain these and other

health and safety records after construction activities have been completed. Figure 5-2 shows the proposed standard form used for sign-in and sign-out of visitors.

3.3.2 Site-Specific Training

Site-specific training will be provided to site personnel involved in the remediation activities. The training will address potential hazards found at the site and safety measures that must be followed on certain areas of the site where health and safety hazards may exist. Procedures regarding the buddy system, spill response, fire prevention/suppression techniques, levels of protection, recognition of potential hazards, overexposure to chemical hazards, and air monitoring will also be covered as part of the training. Further, the training will include discussion of general site conditions.

3.3.3 Daily Safety Meeting

Project personnel will be given briefings by the SHSO on a daily or as needed basis determined by the SHSO. These daily meetings will further assist site personnel in conducting their activities in a safe manner and provide workers with information on new operations, changes in work practices, or changes in environmental conditions at the work site. Briefings will also be given to facilitate conformance to prescribed safety practices when performance deficiencies are identified during routine, daily activities or as a result of safety audits. All construction activities in the flightline will be coordinated with Air Operations. Figure 5-3 is a summary form that will be completed to document topics discussed during each Daily Safety Meeting. The completed summary form will be provided daily to the ConRep.

3.3.4 Emergency First Aid Training

The SHSO and an additional on-site McLaren/Hart professional employee will be trained in American Red Cross Standard First Aid, CPR, and the OSHA Bloodborne Pathogens Standard. This training has been provided so that in the event of an emergency or other incident, primary care can be given to an individual in need before professional response providers arrive.

3.3.5 Spill Response Training

Spills will be reported to the MCAS Fire Station (911) immediately. Site personnel will be trained to respond to spills at the Site. The SHSO will offer this training during the site-specific training. The training will range from awareness of spill potential to responding to spill situations. The personnel will learn how to prevent spills from occurring, how to look for and identify spills, and the location and proper use of the portable spill containment kit. Specifically, spill response training will include the following:

- Control of an area where a spill has occurred, including setup of barriers to keep personnel not involved in cleanup efforts out of the area;
- Training in the proper use of sorbent, and other cleanup materials; and,
- Training in the proper notification and documentation of a spill occurrence.

The portable spill containment kit will include absorbent pads, and vermiculite. In an occurrence of a spill, these materials will be used to contain and clean up the spill. Once used, these materials will be containerized and disposed of at a facility licensed to accept such contaminated material.

Spills associated with motorized construction vehicles will most likely be fuel spills, oil leaks, or hydraulic fluid leaks. All equipment will be inspected on a regular basis to ensure that all seals are tight and no hoses have the potential to leak. Caution will be taken to ensure that no fuel is spilled during refueling of the vehicle. If any of the above should occur, the area will be cleaned up and reported as discussed in Section 3.7 of this Plan.

In addition, the potential exists for product or contaminated groundwater to spill during the startup and testing of the product recovery system. If any spillage occurs because of this work, the spill will be contained immediately and reported as discussed in Section 3.7 of this Plan. Water generated during testing of pumps and equipment will be minimal and will be treated through the treatment system.

The spill prevention training will significantly reduce the potential of any spill to occur during construction at this site. The training will be modified, as necessary, during construction to meet any different potential spill problems. This implementation and periodic review will result in a safe work area and minimize potential environmental impacts.

3.4 MEDICAL SURVEILLANCE PROGRAM

3.4.1 Personnel Screening

In accordance with 29 CFR 1910.120(f), McLaren/Hart is responsible for instituting a medical surveillance program for the following personnel:

- All employees who are or may be exposed to hazardous substances or health hazards at or above permissible exposure limits or, if there is no permissible limit, above the published exposure levels for these substances, without regard to the use of respirators, for 30 days or more a year;
- All employees who will wear a respirator for 30 days or more a year as required by 29 CFR 1910.134;
- All employees who are injured, become ill or develop signs or symptoms due to possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation.

For this project, employees participating in intrusive activities (see Section 3.6) or entering the EZ (see Section 3.9) will be considered as potentially exposed to hazardous substances or health hazards.

In addition, any site worker (*i.e.*, McLaren/Hart employee or subcontractor employee) exhibiting symptoms relating to heat/cold stress or other work related physical disorder will be examined by a licensed occupational physician as soon as practicable upon exhibiting these symptoms.

The McLaren/Hart medical surveillance program is designed and will be implemented by a licensed occupational physician in accordance with 29 CFR 1910.120(f). Medical surveillance will include, at a minimum, the following procedures:

- Complete medical and work histories;
- Physical examination;
- Pulmonary function tests;
- Chest X-Ray (frequency to be determined by physician);
- EKG (frequency to be determined by physician);
- Eye examination;
- Audiometry;
- Qualitative respirator fit test;
- Urinalysis; and,
- Blood chemistry.

When personal protective equipment more stringent than Level D (see Section 3.8) is required at the site, workers that will be performing intrusive activities or entering the EZ will have completed medical surveillance, to the level described above, through their employer. The medical surveillance program described above will categorize personnel as fit-for-duty and able to wear respiratory protection. Confirmation from licensed occupational physicians identifying personnel as able to wear respiratory protection will be required on site prior to personnel using a respirator.

3.5 WORK ACTIVITIES

Listed below are the work activities to be conducted by McLaren/Hart at the site (anticipated order of completion). Potential health and safety hazards related to these activities are found in Sections 3.6 and 3.7 of this plan, respectively. The McLaren/Hart work activities for this project are as follows:

- SETUP/CONSTRUCT TEMPORARY FACILITIES AND SITE CONTROLS
- EXCAVATION OF PETROLEUM-LADEN SOIL
- VERIFICATION SAMPLING

- SITE RESTORATION
- DEMOBILIZATION
- INSTALL MONITORING WELLS

3.6 POTENTIAL HEALTH HAZARDS

The following section outlines the primary potential health hazards that have been identified at the site. Presented in subsequent sections are the areas in which the potential health hazard may be found, along with the form(s) in which the potential contaminant may be found. Particular attention will be paid during site-specific training to discussing the potential health hazards associated with the activities to be carried out at the site, as listed above. These hazards will be reaffirmed in the daily safety meetings. Following are descriptions of the potential health hazards:

DIESEL FUEL (JP-5)

No. 2 Fuel Oil is basically diesel fuel and is mildly toxic by injection, and combustible when exposed to heat of flame. The primary constituent of concern in fuel oil is Naphthalene. Fuel oil has a flash point of 100 degrees F and an auto-ignition temperature of 494 degrees F.

Specific petroleum hydrocarbon compounds identified through laboratory analysis of the groundwater and soil at the site are presented below.

Benzene

Benzene is a confirmed human carcinogen, poisonous by inhalation, moderately toxic by ingestion, and a severe eye and moderate skin irritant. The PEL for benzene is 1 ppm with a short term exposure limit (STEL) of 5 ppm.

Ethylbenzene

Ethylbenzene is moderately toxic by ingestion and mildly toxic by inhalation and skin contact. The PEL for Ethylbenzene is 100 ppm.

Xylene

Xylene is a clear liquid and is mildly toxic by ingestion and inhalation. Human systemic effects from inhalation include olfactory changes, eye irritation, and pulmonary changes. Xylene is an eye irritant at concentrations over 200 ppm and is a fire hazard when exposed to heat or flame. The PEL for Xylene is 100 ppm.

A Material Safety Data Sheet (MSDS) station will be located at the site trailer. An MSDS for gasoline. and diesel fuel along with each chemical to be used during the project will be available to all site workers. MSDS sheets for diesel fuel are provided at the end of this section.

Following is a summary, per work activity, of potential health hazards at the Building 3904 Site.

3.6.1 Setup/Construct Temporary Facilities and Site Controls

During the mobilization phase of the project, site personnel will not be exposed to impacted soil or groundwater. No chemicals and/or hazardous substances are expected to be used during this phase of the project. Protective clothing above Level D (outlined in Section 3.8.1.1) and air monitoring (outlined in Section 3.8.1.2) will not be required during this phase of work.

3.6.2 Excavation of Petroleum Contaminated Soil

The soil will be excavated in an open pit excavation to a depth of up to 14 feet below grade. The excavation will be backfilled with granular material and excavated soil. Contaminated soil will be collected, sampled, and properly disposed. Air monitoring will be conducted during trench excavation using an OVD and an LEL/O2 Meter. Respiratory protection will be determined based on the results of air monitoring. Personnel entering the excavation will wear overboots and gloves resistant to petroleum hydrocarbons.

3.6.3 Installation of Monitoring Wells

Monitoring wells will be installed using drill rigs at the project site. During well installation, air monitoring will be conducted in the worker breathing zone and adjacent to the borehole opening using an OVD and LEL/O_2 meter. Respiratory protection will be selected based on the results of the air monitoring results. Petroleum hydrocarbon resistant overboots and gloves will be worn by drillers and associated personnel. Safety hazards associated with drilling activities are discussed in Section 3.7.3

3.6.4 Verification Sampling

Verification samples will be obtained from the excavator bucket from outside of the excavation. Air monitoring will be conducted during excavation and sampling using an OVD and an LEL/O2 Meter. Respiratory protection will be determined based on the results of air monitoring. Personnel entering the excavation will wear overboots and protective gloves resistant to petroleum hydrocarbons. Excavation safety is discussed in Section 3.7.4.

3.6.11 Site Restoration

Site restoration activities will be non-intrusive, and site personnel are not expected to encounter contaminated soil or groundwater during this activity. Air monitoring and protective equipment above Level D will not be required during this phase of the project.

3.6.12 Demobilization

Demobilization activities will be non-intrusive and should not present a situation in which site workers will be exposed to potential health hazards. Air monitoring will not be required during this phase of the project.

3.7 POTENTIAL SAFETY HAZARDS

The following sections outline the potential safety hazards associated with remediation activities at the site. Site-specific training will include discussions on the potential safety hazards associated with site activities. The potential safety hazards will be reaffirmed in the daily safety meetings.

SPECIAL SAFETY CONCERNS

Confined Space Entry

Confined space entry is not anticipated during this project. In the event that a confined space entry is required, the procedures found in the "Confined Space Entry Program" of the *J.A. Jones Safety Programs and Procedures Manual* will be followed.

Open Trenches and Excavations

Soil excavation activities will require excavation to approximately 14 feet below ground surface in order to remove petroleum-laden soil. Excavations in excess of four feet in depth will be provided with trench boxes, shoring or similar protective equipment. When working around trenches and excavations, the safety procedures found in the *J.A. Jones Safety Programs and Procedures Manual* will be followed and the following precautions taken:

- All excavation work will proceed in accordance with applicable requirements set forth in OSHA regulations 29 CFR 1926, Subpart P-Excavations;
- Construction fencing or traffic barriers and caution tape will be placed around the trench work area to restrict access to the immediate exclusion zone. This barrier will prohibit access to the trench for workers who are not involved in the trenching activity;
- Workers will be tied off to a stable structure using the lanyard and belt system;
- Workers will not jump across the open trenches;
- Excavations will be benched where possible to minimize cave-in potential; and
- Excavations will be backfilled as soon as possible after excavation and installation (preferably the same working day if feasible).

Protective systems, as required, will be used in accordance with the manufacturer's recommendations and reviewed by the SHSO (competent person). Daily inspections of the trench will be conducted by the SHSO and will include the following:

- Observation of trench conditions for situations that could result in possible cave-ins; and
- Indications for failure of protective systems.

Inspection of the excavations and trenches will be conducted prior to the start of work and frequently throughout the work shift. Inspection will also be conducted by a competent person after every rain storm or other potential hazard-increasing occurrence.

Spill Containment

During this project, the "Reporting Hazardous Material Spills/Incidents" procedures found in the *J.A. Jones Safety Programs and Procedures Manual* will be followed. However, during site-specific training, the SHSO will review the responsibilities that site personnel retain in the event of a spill. The SHSO will notify the MCAS Fire Department (911) in the event of a small or large spill, and site workers will respond to the situation by controlling and/or containing the spill. Once the spill is under control, the procedures outlined in the "Reporting Hazardous Material Spills/Incidents" will be followed. The SHSO will submit a Spill Report (Figure 4-1) to the ROICC and EAD within 24 hours of the spill occurrence. This report will detail the characteristics, extent, and response measures taken with regard to the spill.

Hard Hat Areas

Work to be performed in areas where overhead hazards are of concern will be designated as "Hard Hat Areas." For this project all workers and site visitors will wear hard hats while on site.

Lockout/Tagout Procedures

Site personnel involved with activities where potential hazardous energy sources may exist will follow the procedures found in the "Danger Tag, Lock, and Try Program" in the *J.A. Jones Safety Programs and Procedures Manual.* A hazardous energy source is defined as any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or any form of stored energy

that could unexpectedly energize a piece of equipment and injure an employee. The SHSO will review the procedures to be followed during the site-specific training prior to installation of the new system.

Fire Protection Procedures

Site personnel involved with activities where the potential of fire exists will follow the procedures found in the "Fire Protection Program" in the *J.A. Jones Safety Programs and Procedures Manual.* The SHSO will review the procedures to be followed during the site-specific training prior to utility relocation.

A burn permit will be obtained from MCAS safety department prior to using metal cutting torches on the site.

Following is a summary, per work activity, of potential safety hazards at the Building 3904 Site. Section 3.8.2 identifies preventative measures that can be taken to complete site activities in a safe manner.

Underground Utilities

Prior to the commencement of construction, the proposed locations of recovery wells and areas of trenching will be surveyed and marked. An underground utility survey will be conducted to horizontally locate within a tolerance of 2 feet all active and abandoned underground utilities in the work areas. The horizontal location of underground utilities will be determined using electromagnetic, magnetic, sonic and other energy fields.

3.7.1 Setup/Construct Temporary Facilities and Site Controls

During this site activity, workers will be setting up equipment and bringing materials to the work site. Slip, trip, and fall hazards; lifting hazards; traffic hazards; and other safety hazards associated with movement of equipment and materials will be present during this activity. Hard hats and steel-toed boots will be worn throughout the project.

3.7.2 Excavation of Petroleum-Laden Soil

Excavation will be accomplished with a track-mounted hydraulic excavator. Another rubber-tired loader will be used to stockpile and load soil. A remote controlled double drum compactor will be used to compact backfill soil. Slip, trip, and fall hazards; lifting hazards; flying debris hazards; hazards associated with work around heavy equipment and other safety hazards associated with demolition will be present during this activity. Protective equipment will include hard hats, steel-toed boots, safety glasses, gloves, and hearing protection.

3.7.3 Installation of Monitoring Wells

Monitoring wells will be installed using drill rigs at the project site. Noise, heavy equipment, slip, trip, and fall, and other safety hazards may be encountered during this activity. Protective equipment will include hard hats, steel-toed boots, safety glasses, gloves, and hearing protection.

3.7.4 Verification Sampling

Verification soil samples will be obtained following completion of the excavation. Samples will be obtained from the excavator bucket. Slip, trip, and fall hazards; lifting hazards; traffic hazards; and other safety hazards associated with movement of equipment and materials will be present during this activity. Hard hats and steel-toed boots will be worn throughout the project.

3.7.11 Site Restoration

Those areas of the site that were modified will be restored to their original form. Site workers will be exposed to potential traffic; heavy equipment; lifting; and slips, trips and fall hazards.

3.7.12 Demobilization

Demobilization activities will entail site workers dismantling those structures and/or devices used during the temporary relocation of the utilities. Site workers will be exposed to potential safety hazards related to lifting; heavy equipment; traffic; and slips, trips, and falls.

3.8 PERSONNEL PROTECTION

Anyone entering the remediation work area shall be advised of and protected from potential hazards. The purpose of PPE is to shield or isolate individuals from the potential health and safety hazards that may be encountered at the site. PPE for this project was selected based on the potential health hazards expected at the site, the work tasks to be performed at the site, and previous project experience. It is understood that site workers have learned the proper donning and doffing, maintenance, and inspection of PPE; however, McLaren/Hart will review these topics during site-specific training.

3.8.1 Potential Health Hazard Protection

This section describes the site-specific requirements for levels of protection (Levels C through D). The required PPE to be worn at the specific protection levels and air-monitoring requirements are also discussed.

Level D

The following criteria determine Level D protection:

- Air monitoring readings up to 5 ppm above background as detected by an Organic Vapor Detector (OVD) sustained for one minute in the breathing zone; and
- Remote potential exists for physical contact or inhalation of petroleum hydrocarbons or inhalation of organic vapors during work operations.

Level D-Modified

The following criteria determine Level D-Modified protection:

- Air monitoring readings up to 10 ppm above background as detected by an OVD sustained for one minute in the breathing zone; and
- Potential exists for physical contact or inhalation of petroleum hydrocarbons or inhalation of organic vapors during work operations.

Level C

The following criteria determine Level C protection:

- Air monitoring readings from 10 to 100 ppm above background as detected by an OVD sustained for one minute in the breathing zone; and
- The small area of skin left unprotected by chemical resistant clothing will not be adversely affected by atmospheric contaminants, liquid splashes or other direct contact.

Any positive air monitoring results above 100 ppm will require that workers leave the area and that the area be ventilated. The Project Superintendent/SHSO will permit site personnel to resume work activities when the area is safe.

3.8.1.1 Personal Protection Equipment

The following would be the personal equipment for each level of protection as a minimum requirement:

Level D

- Coveralls or other appropriate clothing;
- Gloves (discretionary);
- Safety glasses;
- Leather or chemical resistant boots or shoes with steel toe and shank;
- Hard hat; and,
- Ear protection (based on noise monitoring).

Level D-Modified

- Tyvek® clothing;

- Gloves;
- Full-face or half-face air-purifying canister equipped respirator (MSHA/NIOSH approved) available at work area;
- Safety glasses;
- Leather or chemical resistant boots or shoes with steel toe and shank;
- Hard hat; and,
- Ear protection (based on noise monitoring).

Level C

- Full-face or half-face air-purifying canister equipped respirator (MSHA/NIOSH approved);
- Chemical resistant clothing (coveralls, hooded two-piece splash suit, or hooded one-piece splash suit at the discretion of the SHSO);
- Inner and outer chemical-resistant gloves;
- Chemical resistant boots with steel toe and shank;
- Disposable outer boots (chemical resistant);
- Safety glasses;
- Hard hat; and,
- Ear protection (based on noise monitoring).

Levels of Protection for Work Activities

Level D attire will be worn during the majority of the site work except during drilling, excavation and tunneling operations, and system startup and testing operation, and where the potential exists for workers to contact contaminated groundwater, soil or be exposed to organic vapors at the site. Level D-modified or Level C attire will be worn during these activities.

Upgrading and downgrading of PPE will result if air monitoring results warrant and/or at the discretion of the SHSO. The SHSO will monitor the use and effectiveness of PPE during site work, as well as require that site workers inspect their PPE for proper fit and performance. Level D-modified attire is the highest level of worker protection expected to be warranted during construction of the remediation system.

3.8.1.2 Frequency and Types of Air Monitoring

Direct Reading/Real Time Monitoring Instruments

The following real-time air monitoring devices will be used at the site:

- An OVD will be used to monitor organic vapors during intrusive activities. Monitoring will be conducted in the breathing zone of the workers. The OVD does not, however, indicate specific compounds;
- An Oxygen/Lower Explosive Limit (O_2/LEL) meter will be used to monitor for oxygen content and potential for explosions in the surrounding area;

The OVD and LEL/O_2 devices will be calibrated before and after each period of use according to manufacturer's instructions and standard industrial hygiene practice. Pre-work function tests of the instrument will be performed and recorded on a daily basis when in use. Periodic air monitoring will be performed prior to the site work to obtain an ambient reading for the area. Subsequent readings will be taken after the various phases of construction commence.

Action Levels

Organic vapor action levels to determine required personal protection needs are provided in Section 3.8.1 of this SHSP.

Reporting Air Monitoring Results

Positive air monitoring readings detected will be recorded in the site Real Time Air Monitoring Log. The log will also include date, location of readings, weather conditions, calibration information, and the initials of person performing the monitoring. Figure 5-4 presents the standard form that will be used for recording air monitoring results. The SHSO will make the results of air monitoring events available to all site workers.

Personal Monitoring

The primary potential for workers to be exposed to organic vapors at the work site will be during the excavation, tunneling, drilling, pipe installation, system startup and testing, and operation and maintenance activities. The remaining site work will not involve contact with significant amounts of contaminated soil or groundwater to warrant the use of personal monitoring devices.

If visible dust is generated during site activities, misting or the use of plastic sheeting will be used in the areas of concern. Workers performing these activities may potentially be exposed to JP-5, diesel fuel and gasoline contaminated groundwater and soil. The potential exposure routes will include inhalation, ingestion, and dermal adsorption. Exposure will be monitored and documented by Health and Safety personnel using OVDs to determine levels of inhalation and dermal protection. Results will be reviewed to determine worker exposure and verify the appropriate respiratory protection.

3.8.2 Potential Safety Hazard Protection

During site activities, all workers will obey the rules and regulations developed by the USN and USMC, as well as those presented in this plan. Of special concern, with respect to site safety, are preventative measures and safe working practices that can minimize the risk of injury to site personnel. The following is a list of preventive measures that can be taken to complete site activities in a safe manner:

- Back strain can be prevented by employing proper lifting techniques when moving supplies, equipment, and tools. Site personnel will be instructed in proper lifting procedures during site-specific training.
- Slipping on wet surfaces can be minimized by using an absorbent material in a wet area, as well as wearing boots with a deep tread.
- Heavy equipment hazards can be minimized by posting signs that notify site personnel as to the existence of such equipment in the area. Additionally, those individuals operating pieces of heavy machinery should know their surroundings and the existence of workers in their respective areas.
- All live electrical lines and/or bare wires will be avoided at all times.
- Eye protection will be worn at all times.
- All personnel will be instructed regarding the location and use of fire suppression equipment.
- Debris will be collected and properly containerized, so that flying debris does not become a safety hazard.
- All personnel will be familiar with the proper use of small tools.
- In areas of potential traffic hazards, barricades or other appropriate traffic control devices will be used.

3.8.3 Hearing Conservation Plan

Working with and around the operation of heavy equipment, as well as in the vicinity of heavy equipment or air powered hand tools, typically results in employee noise exposure equal to or in excess of an 8-hour time weighted average of 85 decibels measured on the A scale. The SHSO will monitor noise periodically with an audio dosimeter or sound level meter. Time weighted averages will be calculated automatically by the instrument or manually. Such exposure requires the implementation of a hearing conservation program in compliance with 29 CFR 1910.93. The SHSO is responsible to ensure that all employees working with or near heavy equipment are provided appropriate hearing protection and that the protection is properly worn by all individuals. The SHSO will follow the procedures outlined in the "Hearing Conservation Program" in the *J.A. Jones Safety Programs and Procedures Manual.* Site personnel will be provided with both in-ear and out-of-ear protection devices (in compliance with ANSI 512.6-1984 and ANSI 53.19-1974, respectively).

3.9 WORK ZONES AND SITE CONTROL

Drawing SK-1 of this Work Plan identifies the established work zones, decontamination areas (personnel and equipment), location of emergency equipment, as well as the evacuation route. Only authorized personnel will be permitted in the potentially contaminated work zones (*i.e.*, EZ and CRZ). Prior to entering these zones, visitors must check-in with the SHSO, present his or her current training or 8-hour refresher training certificate, sign the site sign-in log, and read this plan. The SHSO will retain a copy of the SHSP at the site. Overall site control will be regulated by the MCAS Fuel Department.

- Exclusion Zone (EZ)
  An EZ is established to identify an area that contains potentially contaminated soil and/or groundwater. EZs can be identified by engineering controls (temporary barricades, fencing, or tape), and a sign that identifies the area as an "Exclusion Zone, Level ___ Protection."
- Contamination Reduction Zone (CRZ)
  A CRZ serves as a buffer area between potentially contaminated and non-contaminated areas. The CRZ is defined as the ingress/egress path to/from the EZ (including decontamination areas).

- Support Zone (SZ)
  A SZ is a non-contaminated area where support facilities are located. The SZ is identified as that area that lies outside of the EZ and CRZ.

Within the established support zone, workers will have toilet facilities and an area to wash their hands. Workers will be permitted to take their scheduled breaks in designated areas. There will be no hand-to-mouth activity permitted in any area other than the SZ. Communication with on-site and off-site personnel will be conducted via telephone. Should the need arise, radios will be used; however, telephones will serve as the communication device for general communication and hazard reporting. McLaren/Hart will conform to restrictions and procedures concerning the use of radios as directed by the ROICC.

3.10 DECONTAMINATION

Elements of the decontamination process and the decontamination area have been designed so as to minimize adverse environmental impacts. The procedures found in this section will be implemented under the direct supervision of the SHSO. The SHSO will monitor the decontamination practices of site personnel and evaluate effectiveness. The decontamination procedures that follow have been chosen based on the contaminants of concern, tasks to be completed, and previous experience.

3.10.1 Personnel Decontamination

Personnel in Level D, Level D-modified, and Level C attire will be required to dispose of any gloves (cloth or chemical resistant), Tyvek®s (if applicable), and/or boot covers, and wash their hands before leaving the site. Gloves and/or boot covers will be disposed of by the SHSO.

Air Purifying Respirators (APR) will also be decontaminated. All cartridges will be removed prior to decontamination and disposed of properly. Each site worker is responsible for the decontamination and clean storage of their own APR. The SHSO will discuss proper respirator decontamination techniques and advise site personnel of how to properly dispose of their used cartridges and where to store their APRs.

In addition to use of the existing decontamination facility in Tank Farm B, temporary decontamination facilities will be constructed on site as necessary. The location of these facilities will be coordinated by the SHSO and USMC personnel at the site. The anticipated location of the decontamination area is shown in McLaren/Hart Drawing SK-1. McLaren/Hart will maintain the decontamination facilities. The following decontamination steps at the respective levels are required:

Level C Decontamination Steps

Step 1	Boot Cover and Outer Glove Wash
Step 2	Boot Cover and Outer Glove Rinse
Step 3	Tape Removal
Step 4	Boot Cover Removal
Step 5	Outer Glove Removal
Step 6	Suit/Safety Boot Wash
Step 7	Suit/Safety Boot Rinse
Step 8	Safety Boot Removal
Step 9	Splash Suit Removal
Step 10	Inner Glove Wash
Step 11	Inner Glove Rinse
Step 12	Face Piece Removal
Step 13	Inner Glove Removal
Step 14	Remove Respirator
Step 15	Thoroughly Wash Hands and Face

Level D (Modified) Decontamination Steps

Step 1	Outer Glove Wash
Step 2	Outer Glove Rinse
Step 3	Tape Removal
Step 4	Outer Glove Removal
Step 5*	Inner Glove Rinse*

Step 6	Tyvek® Removal
Step 7	Safety Boot Wash
Step 8	Safety Boot Rinse
Step 9*	Inner Glove Removal*
Step 10	Remove Respirator if Worn
Step 11	Thoroughly Wash Hands and Face

Level D Decontamination Steps

Step 1	Remove Outer Garments (*i.e.*, coveralls)
Step 2	Remove Outer Gloves
Step 3*	Remove Inner Gloves*
Step 4	Thoroughly Wash Hands and Face

* *Note: Inner gloves will be included as a part of these respective PPE ensembles if the SHSO so warrants.*

Wastewater generated during personnel decontamination will be collected and stored on site in drums or other appropriate containers with contents identified, dated, and marked "Pending Analysis." McLaren/Hart personnel will coordinate a storage location with on-site USMC representatives.

3.10.2 Equipment Decontamination

Equipment used in excavation and other site activities will be decontaminated after tasks are completed and prior to leaving the site. Only portions of the equipment that come in contact with potentially contaminated material will be decontaminated.

Monitoring equipment will be decontaminated with a phosphate-free soap and water.

In the event of inclement weather where precipitation is of concern, trucks and equipment wheels will be cleaned before being permitted to travel on roads leaving the work area. The location of the equipment decontamination area will be coordinated by the SHSO and MCAS EAD personnel; however, Drawing SK-1 illustrates the anticipated location of the equipment decontamination area.

Wastewater generated during equipment decontamination will be collected and stored on site in drums or other appropriate containers labeled with the site name, media (soil/groundwater), date, and Contractor name.

3.10.3 Wastewater Disposal

Upon completion of all necessary personnel and equipment decontamination at the site, a composite sample of the fluids will be collected. The decontamination fluids will be treated through the treatment system or disposed off-site. Waste profile and manifest forms will be provided to the MCAS EAD if disposed of off-site.

3.11 CONTINGENCY PLAN

The following contingency plan has been developed in the event that extraordinary situations arise during site activities. The SHSO will discuss the identification, signaling, and required response for the extraordinary situations listed in this section of the plan during the site-specific training.

A list of Emergency Telephone Numbers will be posted at the site. The nearest hospital is Cherry Point Naval Hospital located on the Base. A map to the hospitals will be posted at the site. Should the hospital of choice change, the plan and map will be modified accordingly.

Periodically, the SHSO will conduct emergency exercises to determine if the measures of the Health and Safety Plan are adequate. The SHSO will assess the results of the exercises to determine if changes to the plan are necessary.

3.11.1 General Response Conditions

Emergencies at the site must be addressed in a manner that minimizes the health and safety risk to both site personnel and the public. The following sections outline potential incidents.

3.11.1.1 First Aid

First aid will be administered by the closest, certified individual to the accident/incident. This assistance will be coordinated by the SHSO and will be conducted in a manner so that those rendering assistance are not placed in a situation of unacceptable risk. The primary concern will be to avoid placing a greater number of individuals in jeopardy.

Bloodborne Pathogens Program

In regard to first aid procedures, McLaren/Hart will follow the "Bloodborne Pathogens Exposure Control Program" (in accordance with 29 CFR 1910.1030), found in the *J.A. Jones Safety Programs and Procedures Manual.* A copy of the program will be retained at the site, and will be reviewed during site-specific training.

3.11.1.2 Accident Report and Response Procedure

All personnel will report any accidents or unusual incidents to the SHSO. The SHSO is responsible for conducting the emergency response in an efficient and safe manner. It will be the responsibility of the SHSO to determine whether or not off-site assistance and/or medical treatment is required. The SHSO will be responsible for alerting the USMC on-site representative and off-site authorities and arranging for their assistance during this time.

The SHSO is responsible for completing a Contractor Significant Incident Report, form PRO-01-08 Rev. 1 found in the *J.A. Jones Safety Programs and Procedures Manual.* Copies of all injury reports will be submitted to the Contracting Officer weekly.

3.11.1.3 Response Requirements

The SHSO will be certified in Adult CPR and First Aid by the American Red Cross or other approved agency. This individual will be available to provide first aid in the event of an emergency. One additional site worker will be certified in Adult CPR and First Aid.

3.11.2 Responsibilities

The SHSO will be responsible for directing responsive activities in the event of an emergency/incident. The SHSO will:

- Assess the situation;
- Determine the required response measures;
- Notify the appropriate individuals;
- Direct on-site personnel during the emergency; and,
- Contact and coordinate with government agencies, if appropriate.

3.11.3 Public Response Agencies

A list of the telephone numbers of public response agencies to be contacted and who may, depending on the nature of the situation, assume authority for emergency response will be developed prior to mobilization on site. In the event of an emergency situation, site personnel will lend all necessary assistance to the agency in charge.

The SHSO will post at the site trailer emergency telephone numbers and a map showing the preferred route to the nearest hospital along with the local and permanent home phone numbers of the SHSO (during non-working hours) and other site personnel.

3.11.4 Emergency Response Equipment

Before remediation activities begin, the following emergency equipment will be stored at the site trailer and tested to verify working order:

- First aid kit (16-unit);
- Air horn;
- Emergency eyewash station (Compliant with ANSI Standard Z358.1-1990);
- 20 pound fire extinguisher (ABC-type);
- Additional Tyvek® and other PPE, safety glasses, hard hats, hearing protection, respirators;
- Water for washing hands and face; and,
- Emergency Response Equipment including oil sorbent pads and 4 sacks of petroleum/oil absorbent material.

Other equipment used for the routine implementation of the worker health and safety protection and monitoring programs will be made available as needed to support emergency response activities.

3.11.5 Accidents and Non-Routine Events

Possible emergencies are outlined in the following subsections. These are not intended to cover all potential situations. Every incident is unique and must be handled in a manner that will not cause further harm to site personnel and/or the surrounding environment. Appropriate initial response is to be provided to assist those in jeopardy without placing additional personnel at an unnecessary risk.

3.11.3.1 Workers Injury

The remediation activities to be performed have the potential to cause worker injury, many of which may be non-chemical in nature. Any sprains, rashes, and lacerations will be treated promptly. It is of utmost importance that follow-up care be taken so that minor injuries do not become aggravated by existing site conditions. Employees are required to report all injuries and illnesses to the SHSO.

If a worker is physically injured, Red Cross First Aid procedures will be followed. Depending on the nature of the injury, off-site/emergency medical response may be sought. If the employee

is injured in a potentially contaminated area and can be moved, they will be taken (via stretcher) a safe distance from the work area where contaminated clothing will be removed and emergency decontamination performed, emergency first aid administered, and transportation to a local emergency medical facility conducted.

If a worker in a potentially contaminated area can only be moved by emergency medical personnel, the SHSO will decide what protective equipment is required to be worn by those medical personnel. Prior to any work being done on this site, all potential emergency responders will be contacted and informed of the potential hazards of work and expected level of protection the workers will be in.

If the injury to the worker is chemical in nature, the following first aid procedures will generally be instituted as soon as possible:

- Skin exposure - If contaminated soil or liquid comes into contact with skin, wash immediately with large quantities of water.
- Inhalation - If a person inhales large amounts of organic vapor, move to fresh air immediately. If breathing has ceased, perform CPR immediately. Always protect the individual from extreme temperatures and keep them as calm as possible. Medical attention should be sought immediately.
- Ingestion - If a contaminated solid or liquid is swallowed, medical attention should be sought immediately. In the interim, the local Poison Hotline should be contacted, so that possible medical procedures can be performed while emergency personnel are in transit.

3.11.3.2 Heat/Cold Stress

Adverse weather conditions are an important consideration in planning and conducting site operations. Hot or cold weather can cause physical discomfort, loss of efficiency, and personnel injury.

Cold Stress

Cold related illnesses are caused by the inability to generate metabolic heat in conjunction with excessive environmental cold. Cold Stress can take many forms including trench foot, frostnip,

frostbite, and hypothermia. Symptoms of cold stress include, shivering, slurred speech, tingling and itching of extremities, dark bluish color, burning sensation followed by numbness, lowering of core body temperature, muscular weakness, uncoordination, and dulled mental ability.

Injury due to cold exposure may be either local or systemic. Local, cold exposure is generally described as frostbite and systemic cold exposure is referred to as hypothermia.

Frostbite injuries most commonly occur on the body extremities (nose, cheeks, hands, feet). Hypothermia is a decrease of core temperature to 95°F or below. Risk factors for the development of frostbite and hypothermia include temperature, medication/drugs, alcohol, wetting, and wind. Frostbite and hypothermia can occur at moderate temperatures (15 to 40°F) with moderate winds (1 to 4 mph). When temperatures fall within the aforementioned range, the SHSO will implement the proper controls found in the "Controlling Heat/Cold Stress" section of the *J.A. Jones Safety Programs and Procedures Manual* which will be readily available on the site. This will also include reevaluating the effectiveness and limitations of PPE selected for site activities.

One or more of the following control measures can help prevent frostbite and hypothermia:

- Personnel observation and temperature monitoring especially of extremities;
- Dry, loose clothing over extremities;
- Proper diet, acclimation, and rest;
- Establishment of work-rest regimen that will provide adequate rest periods of warming; and,
- Taking breaks in a warm area.

Heat Stress

Heat related illnesses are caused by the body's inability to dissipate metabolic heat in conjunction with excessive environmental heat. Heat Stress can take many forms ranging from heat rash and heat cramps to heat exhaustion and heat stroke. Symptoms of heat stress include skin rash, reduced sweating, weak pulse, shallow breathing, pale, clammy skin, dizziness, fatigue, confusion, increased body temperature, and nausea.

The likelihood of heat stress can increase with increased levels of PPE. Tyvek® and other synthetic coveralls can increase sweating and decrease heat loss and ventilation. The SHSO will consider the level of PPE when scheduling breaks and will be in direct communication with the work force. Some of the considerations will be:

- Humidity;
- Temperatures; and
- Air movement.

One or more of the following control measures will be employed to help control heat stress:

- Visual monitoring of personnel;
- Provision for adequate liquids to replace lost body fluids. Employees must replace water and salt lost through perspiration. Employees will be encouraged to drink more than the amount required to satisfy thirst, since thirst satisfaction is not an accurate indicator of adequate salt and fluid replacement;
- Replacement fluids can be a 0.1 percent salt solution or commercial thirst quencher and fresh water;
- Establishment of a work-rest regiment that will provide adequate rest periods for cooling down;
- Breaks taken in a cool rest area;
- Employees not being assigned other tasks during rest period; and,
- Employees being informed of the importance of adequate rest, acclimatization, and proper diet in the prevention of heat stress.

Refuges for Emergency Situation(s)

The SHSO will coordinate with MCAS personnel in order to establish an emergency refuge for site personnel. This refuge will shield workers from inclement weather and/or other hazards that may arise in an emergency situation. Heat/cold stress work breaks may be taken in this area. The location of the refuge areas will be determined during the initial setup at the work sites.

3.11.3.3 Fires

Personnel in each work crew will be knowledgeable in fire-suppression techniques. The Site-Specific Training will cover:

- Techniques for smothering fires, using available non-combustible materials; and
- Emergency evacuation procedures in the event fires reach an out-of-control level.

Small Fires

In the event of a small fire at the site, the SHSO will, at a minimum, take the following actions:

- Immediately notify the MCAS Fire Department;
- Evacuate all unnecessary personnel from the area to an upwind location, if possible;
- Attempt, using properly protected personnel, to extinguish fire using portable fire extinguishers or by smothering; and,
- Request emergency response assistance (ambulance, fire, hospital, poison control center) as needed for any injuries or exposures to hazardous chemicals.

Large Fires

In the event of a large or small fire that cannot be extinguished, the SHSO will undertake the following actions:

- Immediately notify the MCAS Fire Department;
- Evacuate all personnel from the area of the fire, preferably to an upwind location;
- Order the appropriate level of protective clothing; and,
- Notify the fire department and other emergency response agencies.

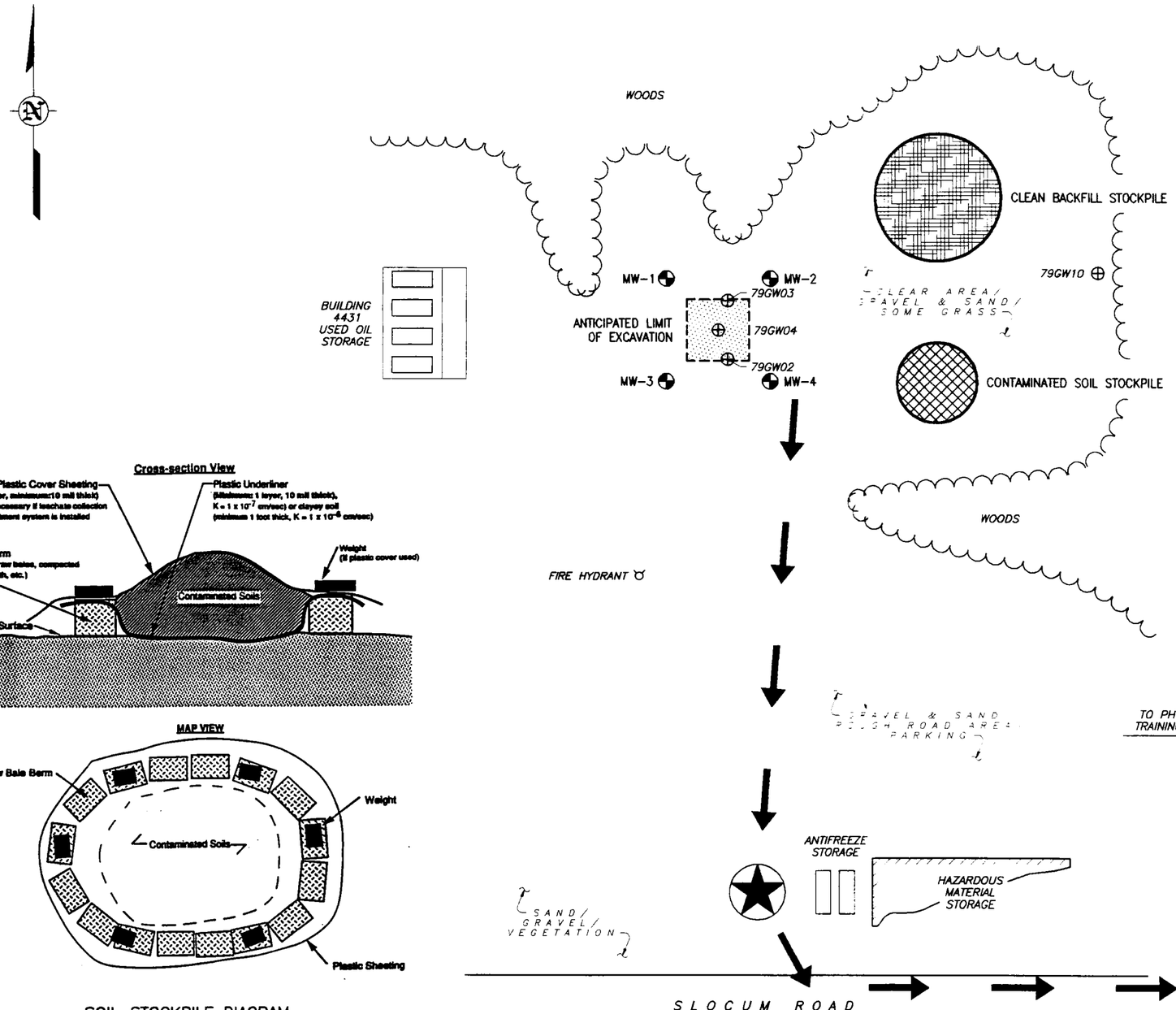
Evacuation Procedures

In the event that the SHSO should declare an evacuation, all personnel would be required to exit the defined work area to an upwind location near the site perimeter or beyond. The collection point (area where workers gather before evacuating) and evacuation route is illustrated in Drawings SK-1. This drawing will be posted for all site personnel to see. Moreover, the evacuation procedures will be reviewed during site-specific training.

3.11.3.4 Inclement Weather Conditions

Inclement weather conditions may occur without warning. It will be the responsibility of the SHSO to halt work due to eminent dangers. The SHSO will also be responsible for ordering the commencement of work once the danger has passed.

4.0 CONTRACTOR-GENERATED CONSTRUCTION DRAWINGS



Cross-section View

MAP VIEW

SOIL STOCKPILE DIAGRAM

NOT TO SCALE

LEGEND

- EVACUATION COLLECTION POINT
- EVACUATION ROUTE
- PROPOSED MONITORING WELL LOCATION
- EXISTING MONITORING WELL LOCATION
- ANTICIPATED LIMIT OF EXCAVATION
- TREE LINE

NOTES:

EXCLUSION ZONE (EZ)

THE EXCLUSION ZONE SHALL BE ESTABLISHED TO IDENTIFY AN AREA THAT CONTAINS POTENTIALLY CONTAMINATED SOIL. THE "EZ" SHALL BE IDENTIFIED BY ENGINEERING CONTROLS (TEMPORARY BARRICADES, FENCING, OR TAPE). A SIGN SHALL IDENTIFY THE AREA AS AN "EXCLUSION ZONE".

CONTAMINATION REDUCTION ZONE (CRZ)

THE CONTAMINATION REDUCTION ZONE SERVES AS A BUFFER BETWEEN POTENTIALLY CONTAMINATED AND NON-CONTAMINATED AREAS. THE "CRZ" IS DEFINED AS THE INGRESS/EGRESS PATH TO/FROM THE EXCLUSION ZONE (INCLUDING THE DECONTAMINATION AREA).

SUPPORT ZONE

THE SUPPORT ZONE IS THE NON-CONTAMINATED AREAS OUTSIDE OF THE EXCLUSION AND CONTAMINATION REDUCTION ZONES AT THE SITE.

EVACUATION COLLECTION POINT

IN AN EMERGENCY SITUATION, PERSONNEL WILL MOVE TO THE EVACUATION COLLECTION POINT FOR A HEAD COUNT. THE SHSO WILL THEN DIRECT ALL SITE PERSONNEL OUT OF THE WORK AREA AS INDICATED.

REFUGE AREA

THE REFUGE AREA WILL BE THE SITE OFFICE TRAILER LOCATED IN TANK FARM B. THIS IS ALSO THE LOCATION OF THE EMERGENCY RESPONSE EQUIPMENT.

NOTES:

1. LOCATIONS OF TEMPORARY FACILITIES WILL BE COORDINATED WITH THE USMC AND CAN BE ADJUSTED AS NECESSARY IN THE FIELD.
2. THIS DRAWING IS FOR INFORMATIONAL PURPOSES ONLY AND IS NOT INTENDED TO BE USED FOR CONSTRUCTION.

GRAPHIC SCALE

IF THIS DRAWING IS A REDUCTION, USE GRAPHIC SCALE

1" = 30'-0" 0 30 60 90 120

REVISIONS

DESCRIPTION	DATE	APPROVED
STA.		

CONTRACTOR: EFD — DESIGN — DRAWN — REVIEW — CHIEF ARCH / ENGR. — PROJECT MANAGER — FIRE PROTECTION — QUALITY CONTROL — BRANCH MANAGER — DESIGN MANAGER

McLaren Hart — DATE — A/E CONTRACT NO. — APPROVED — DATE — ACTIVITY - SATISFACTORY TO — APPROVED — DATE — FOR USE FOR CONSTRUCTION MARKS

DEPARTMENT OF THE NAVY — NAVAL STATION — ATLANTIC DIVISION — NAVAL FACILITIES ENGINEERING COMMAND — NORFOLK, VIRGINIA

MARINE CORPS AIR STATION — CHERRY POINT, NORTH CAROLINA

BUILDING 3904 SITE REMEDIATION

TEMPORARY FACILITIES/REMEDIATION PLAN

CODE ID. NO. ____ SIZE D

SCALE: AS NOTED

EFD NO.

STA. PROJ. NO. 945863

SPEC NO

CONSTR. CONTR. NO. N62470-93-D-3033

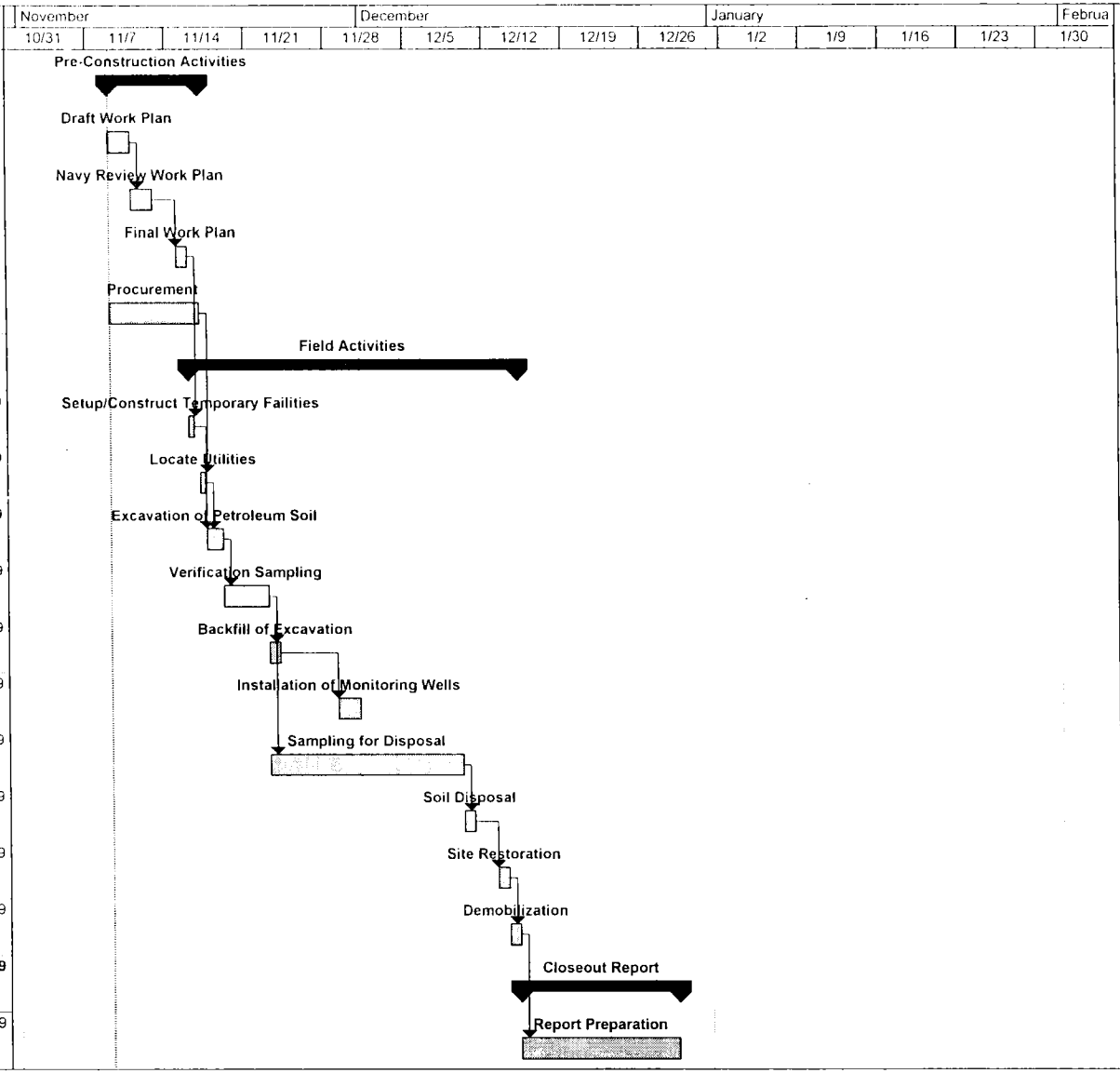
NAVFAC DRAWING NO.

SHEET 1 OF 1

SK-1

5.0 SCHEDULE FOR SITE REMEDIATION

ID	Task Name	Duration	Start	Finish
1	**Pre-Construction Activities**	**6 days**	**Tue 11/9/99**	**Tue 11/16/99**
2	Draft Work Plan	2 days	Tue 11/9/99	Wed 11/10/99
3	Navy Review Work Plan	2 days	Thu 11/11/99	Fri 11/12/99
4	Final Work Plan	1 day	Mon 11/15/99	Mon 11/15/99
5	Procurement	6 days	Tue 11/9/99	Tue 11/16/99
6	**Field Activities**	**18 days**	**Tue 11/16/99**	**Tue 12/14/99**
7	Setup/Construct Temporary Faiiti	0 5 days	Tue 11/16/99	Tue 11/16/99
8	Locate Utilities	0 5 days	Wed 11/17/99	Wed 11/17/99
9	Excavation of Petroleum Soil	1 5 days	Wed 11/17/99	Thu 11/18/99
10	Verification Sampling	2 days	Fri 11/19/99	Mon 11/22/99
11	Backfill of Excavation	1 day	Tue 11/23/99	Tue 11/23/99
12	Installation of Monitoring Wells	2 days	Mon 11/29/99	Tue 11/30/99
13	Sampling for Disposal	10 days	Tue 11/23/99	Thu 12/9/99
14	Soil Disposal	1 day	Fri 12/10/99	Fri 12/10/99
15	Site Restoration	1 day	Mon 12/13/99	Mon 12/13/99
16	Demobilization	1 day	Tue 12/14/99	Tue 12/14/99
17	**Closeout Report**	**10 days**	**Wed 12/15/99**	**Tue 12/28/99**
18	Report Preparation	10 days	Wed 12/15/99	Tue 12/28/99



Project: TO 63 WP
Date: Tue 11/9/99

Task | Milestone | Rolled Up Split | External Tasks
Split | Summary | Rolled Up Milestone | Project Summary
Progress | Rolled Up Task | Rolled Up Progress

Figures

FIGURE 5-1

HEALTH AND SAFETY PLAN

for

Building 3904 Site Remediation

CLIENT:	Department of the Navy, Atlantic Division
SITE:	MCAS, Cherry Point, North Carolina
PROJECT/TASK ID#:	**Task Order # 0063**
PREPARATION DATE:	November 11, 1999

HEALTH AND SAFETY PLAN APPROVALS:

PROJECT MANAGER	Name	Signature	Date
FIELD SUPERVISOR	Name	Signature	Date
HEALTH AND SAFETY MANAGER	Name	Signature	Date

Acknowledgements:

CONTRACTOR	Name	Signature	Date
CONTRACTOR	Name	Signature	Date

FIGURE 5-2

Building 3904 Site Remediation
MCAS, Cherry Point
North Carolina
Contract No. N62470-93-D-3033
Task Order #0063

SIGN-IN LOG

DATE: _____

NAME	AM/IN	LUNCH OUT	LUNCH IN	PM/OUT	MISC/OUT OF OFFICE/LOCATION/ RTN TIME/NUMBER WHERE YOU CAN REACHED

FIGURE 5-3

Building 3904 Site Remediation
MCAS, Cherry Point
North Carolina
Contract No. N62470-93-D-3033
Task Order #0063

Daily Safety Meeting

Date: _____ Time: _____ HSO: _____

Safety Topics Presented

Issue	*Today's Work Areas*			
Chemicals of Concern				
Physical Hazards of Concern				
Special Concerns				

Attendees (Please Print)

_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____

(rev 3-6-95)

TABLE 5-4

Building 3904 Site Remediation
MCAS, Cherry Point
North Carolina
Contract No. N62470-93-D-3033
Task Order #0063

Air Monitoring Log

Project Name: _____ SHSO: _____

Date	Init.	Instrument	Location	Suspected Compound	Conc.	Unit	Comments

G:clients\Navy\945863\Work Plan\Fig5-4