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CORPORATE / BASEWIDE HEALTH AND SAFETY PLAN FOR LONG TERM MONITORING AND OPERATION & MAINTENANCE AT MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA

Prepared for:

DEPARTMENT OF THE NAVY
Contract No. N62470-03-D-4000

Atlantic Division
Naval Facilities Engineering Command
6506 Hampton Boulevard
Building A (South East Wing) 3rd Floor
Norfolk, Virginia 23508

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Contract Task Order 0010

November 2003

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We hereby certify that the Corporate / Basewide Health and Safety Plan shown and marked in this submittal is proposed to be incorporated into Contract Number N62470-03-D-4000, is in compliance with the contract drawings and specifications, can be installed in the allocated spaces, and is submitted for Government approval.

Certified by Submittal Reviewer / Program Manager
Martin M. Schlesinger, P.E.

Certified by QC Program Manager
Michael Slade, E.I.T.

Certified by Certified Safety Professional /
Certified Industrial Hygienist
DeWitt Davis IV, C.I.H.

November 2003

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1.0 INTRODUCTION

1.1 OBJECTIVE

Engineering & Environment (EEI) has been tasked by the Naval Facilities Engineering Command (NAVFACENGCOM) in support of Environmental Remediation Services under the cognizance of the Atlantic Division (LANTDIV) for Marine Corp Base (MCB), Camp LeJeune (CLJ), North Carolina. This Health and Safety Plan (HASP) is to provide a mechanism for establishing safe working conditions at job sites. The safety organization, procedures, and protective equipment have been established based upon an analysis of potential hazards. Specific hazard control methodologies have been evaluated and selected to minimize the potential of accident or injury. This HASP has been prepared relating to the scope of services necessary to support Prime Contract No. N62470-03-D-4000, Contract Task Order 0010.

1.2 POLICY STATEMENT

The policy of Engineering & Environment, Inc. is to provide a safe and healthful work environment for all employees. EEI considers no phase of operations or administration to be of greater importance than injury and illness prevention. Safety takes precedence over expediency and shortcuts. At EEI, it is believed all accidents and injuries are preventable. EEI will take every reasonable step to reduce the possibility of injury, illness, or accident.

This Health and Safety Plan (HASP) prescribes the procedures that must be followed during referenced site activities. Operational changes that could affect the health and safety of personnel, the community, or the environment will not be made without the prior approval of the Project Manager and the Health and Safety Manager. The provisions of this plan are mandatory for all personnel and subcontractors assigned to the project. All visitors to the work site must abide by the requirements of the plan.

1.3 REFERENCES

This HASP complies with applicable Occupational Safety and Health Administration (OSHA), U.S. Environmental Protection Agency (EPA), and Engineering & Environment, Inc. Corporation Health & Safety policies and procedures. This plan follows the guidelines established in the following:

- Standard Operating Safety Guides, EPA (Publication 9285.1-03, June 1992).
- Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, NIOSH, OSHA, USCG, EP A (86-116, October 1985).
- Title 29 of the Code of Federal Regulations (CFR), Part 1910.
- Title 29 of the Code of Federal Regulations (CFR), Part 1926.
- Health and Safety Requirements Manual, US Army Corps. of Engineers, EM 385-1-1, 1996.
- LANTDIV Program Health and Safety Procedures Manual.

1.4 DISCLAIMER

The following HASP has been designed for the methods presently contemplated by EEI for execution of the proposed work. Therefore, the HASP may not be appropriate if the work is not performed by or using the methods presently contemplated by EEI. In addition, as the work is performed, conditions different from those anticipated might be encountered and the HASP may have to be modified. Therefore, EEI only makes representations or warranties as to the adequacy of the HASP for currently anticipated activities and conditions.

2.0 SITE HISTORY/SCOPE OF WORK

2.1 SITE HISTORY/BACKGROUND

Located in Onslow County, North Carolina, MCB, Camp Lejeune is host to six Marine Corps commands and two Navy commands. All the real estate and infrastructure is owned, operated, and maintained by the host command. MCB, Camp Lejeune also provides support and training for the following tenant commands: Headquarters, Marine Forces Atlantic (MORFORLANT); Headquarters Nucleus, Second Marine Expeditionary Force; Second Marine Division; Second Marine Force Service Support Group; Second Marine Surveillance, Reconnaissance and Intelligence Group; Sixth Marine Expeditionary Brigade; the Naval Hospital and the Naval Dental Clinic.

The entire facility includes approximately 236 square miles and is located within the generally flat, Atlantic Coastal Plain. MCB, Camp Lejeune is bisected by the New River, which flows in a southeasterly direction and forms a large estuary before entering the Atlantic Ocean. The Atlantic Ocean forms the southeast boundary of the facility. The western and northwestern boundaries are U.S. Route 17 and State Road 24, respectively. The City of Jacksonville, North Carolina is located immediately northwest of MCB, Camp Lejeune. Three large, publicly owned tracts of land are located within 15 miles of the facility: Croatian National Forrest, Hoffman Forrest and Cap Davis Forrest.

MCB, Camp Lejeune has been actively involved with environmental investigations and remediation programs since 1983, beginning with the Navy Assessment and Control of Installation Pollutants (NACIP) Program. An Initial Assessment Study (IAS) was the first investigation of potentially hazardous sites conducted under NACIP. The IAS, which was conducted in 1983, identified areas of concern that might potentially cause threats to human health and the environment as a result of past storage, handling and disposal of hazardous materials. Based on a review of historical records, field inspections and personal interviews, 76 areas of concern (AOCs) were identified. The IAS concluded that, while none of the sites posed an immediate threat to human health or the environment, further investigations to assess the potential long-term impacts were warranted at 22 of the 76 sites.

The Department of Navy initiated the Installation Restoration (IR) Program in 1986, following enactment of the Superfund Amendments and Reauthorization Act (SARA). The IR Program, which was implemented to follow the requirements of SARA, replaced the NACIP Program. MCB, Camp Lejeune was placed on the CERCLA National Priorities List (NPL) in October 1989. Following the NPL listing, a Federal Facilities Agreement (FFA) between USEPA region IV, North Carolina Department of Environmental, Health and Natural Resources (now NC DERN), and the DoN was signed in February 1991. The FFA was prepared to fulfill the following objectives:

- To ensure that potential environmental impacts associated with past and present activities at MCB, Camp Lejeune are thoroughly investigated and appropriate CERCLA response actions are developed and implemented as necessary to protect the health, wealth and the environment;

- To establish a procedural framework and a schedule for developing implementing and monitoring appropriate response actions at MCB, Camp Lejeune in accordance with CERCLA, the National Oil and Hazardous Substances Pollution Control Contingency Plan (NCP) and relevant USEPA remediation policies.

- To encourage public participation, facilitate cooperation, and exchange of information among parties associated with the investigation and remediation process.

2.2 SCOPE OF WORK

This Basewide Health and Safety Plan focuses on environmental remediation activities at the MCB, Camp Lejeune.

The principal tasks to be conducted are listed below:

- Site Preparation
- Clearing and grubbing
- Excavation and backfill
- Fall Protection (at Groundwater Treatment Plants)
- Trenching and Installation of SVE and AS Pipe
- Soil Boring/Soil Sampling! Well Installation Water
- Treatment
- Vacuum Truck Operations
- Removing Bullets and Sweeping Target Areas
- Changing Filters on Bullet Traps
- General Maintenance and Repairs on Bullet Traps
- Sampling
- Truck and Equipment Loading
- Fence Installation
- Facility Construction
- Equipment Decontamination
- Site Restoration

These activities have been analyzed for potential hazards for which control measures are provided in Appendix B.

3.0 KEY PERSONNEL AND MANAGEMENT

The Project Manager (PM), Site Supervisor (SS), Site Health & Safety Supervisor (SHSS), Health and Safety Coordinator (HSC), Program Industrial Hygienist and the Health and Safety Manager (HSM) are responsible for formulating and enforcing health and safety requirements, and for implementing this HASP. The following summarizes the health and safety responsibilities of the site management.

3.1 PROJECT SAFETY RESPONSIBILITIES

The PM has the overall responsibility for the project and to assure that the requirements of the contract are attained in a manner consistent with the HASP requirements. The PM will coordinate with the SS and the SHSS to assure that the work is completed in a manner consistent with the HASP. The SS is responsible for field implementation of the HASP. The SS will be the main contact in any on-site emergency situation and will insure off-site emergency agencies have been contacted prior to the start of work. The HM and SHSS are authorized to administer this HASP. The HM and SHSS is authorized to stop work when an imminent health or safety risk exists. The HSC and/or HSM are responsible for reviewing the HASP and ensuring that the HASP is complete and accurate. The HSC and/or HSM also provide technical and administrative support for the Health and Safety Program and will be available for consultation when required. Each employee is responsible for personal safety as well as the safety of others in the work area.

3.2 KEY SAFETY PERSONNEL

The following individuals share responsibility for health and safety at the site:

Technical Operation	Martin Schlesinger (757) 457-0002 (office), (757) 619-5880 (cellular)
Director of Corporate Programs	Aneil Kumar (757) 457-0002 (office) (757) 536-1317 (cellular)
Site Health & Safety Supervisor (SHSS)	Bill Morris (910) 989-3214 (office) (757) 536-0157 (cellular)
ROICC	Brent Rowse (910) 451-2581 (office)
Site Health & Safety Manager	DeWitt Davis, CIH (757) 495-3524 (office) (757) 434-0187 (cellular)

4.0 ACTIVITY HAZARD ANALYSIS

4.1 CHEMICAL HAZARDS

This section outlines the potential chemical and physical hazards, which workers may be exposed to during work at MCB Camp Lejeune. Table 4.1 lists known contaminants at various sites throughout MCB Camp Lejeune. Specific contaminants at each project site will be clearly outlined in the Site Specific Addendum for each scope of work. Chemicals that may be brought to the site for which an MSDS is necessary, will be included in the MSDS book located in the office trailer.

Based on site historical records and previous investigations, the primary site contaminants at MCB, Camp Lejeune include the following:

TABLE 4-1

CHEMICAL	EXPOSURE ROUTES	PEL/TLV	HEALTH HAZARDS/ PHYSICAL HAZARDS
Arsenic	Inhalation ingestion	0.01 mg/m^3	• A human carcinogen; a powerful allergen, inhalation and contact causing burning, swelling and redness in the eyes, nose, throat and skin; ingestion causes nausea, vomiting, nervous system effects in the extremities (numbness, tingling, weakness); long term exposure can cause liver, kidney and blood damage
			• A fire hazard in the form of dust or contact with oxidizers, thermal decomposition produces toxic gases.
Barium	Inhalation ingestion	0.5 mg/m^3	• Insoluble salts are skin, eye, and respiratory irritants; a nuisance dust; water soluble compounds are highly toxic by ingestion; abdominal pain, vomiting, diarrhea, convulsions, muscular spasms, internal hemorrhage
			• Insoluble compounds are largely non-reactive; thermal decomposition can release toxic gases
Benzene	Skin, eye Inhalation, Ingestion	0.5 ppm	• Prolonged skin contact with Benzene or excessive inhalation of its vapor may cause headache, Weakness, loss of appetite, and lassitude. A Human Carcinogen.
			• Extremely flammable, keep sources of ignition away. Incompatible with fluorides, chlorides, oxygen, permanganates, acids, and peroxides

CHEMICAL	EXPOSURE ROUTES	PEL/TLV	HEALTH HAZARDS/ PHYSICAL HAZARDS
Benzo(a) Pyrene Benzo(a) anthracene,	Skin, eye Inhalation, ingestion	0.2 mg/m³	• An Animal Carcinogen, probable human carcinogen; a nasal, respiratory tract, and skin irritant; (all substances have probable, possible carcinogenic potential)
Benzo(b) Fluoranthene, Benzo(k) Fluoranthene			• Reacts with acids and oxidizers; prodices acrid smoke, toxic gases when involved in fires, thermal decomposition
Chlordane	Skin, eye, Inhalation ingestion	0.5 mg/m³	• Tremors, convulsions, excitement, loss of coordination (ataxia), gastritis, respiratory collapse; a suspected carcinogen
			• Decomposition of chlordane produces chlorine fumes
Chromium	Skin, eye, inhalation, ingestion	0.5 mg/m³ Cr(VI) Soluble 0.05 mg/m³	• Some Chromium (VI) compounds are confirmed human carcinogens; corrosive irritant to skin, eyes, respiratory tract; deep skin ulcers; not (always) immediately painful; an allergic sensitizer; 5 grams ingested can be fatal
		Insoluble 0.01 mg/m³	• Reacts with strong oxidizers, alkalis, can react with, ignite oils, grease, paper and plastics
DDE Dichloro Diphenyl- Dichloroethylene -DDD	Skin, Eye, Inhalation Ingestion	1 mg/m³	• A decomposition product of DDT, a chlorinated pesticide; highly toxic by ingestion; a bio-accumulator; headache, drowsiness, sweating, irregular heart beat, chest pains, tremors, chloro-acne, weight loss; possible carcinogen
			• Reacts with strong acids and oxidizers, thermal decomposition can release toxic fumes of Cl-
DDT Dichloro diphenyl trichloroethane	Skin, eye, Inhalation, Ingestion	0.5 mg/m³	• A skin, eye irritant; numbness, tingling lips, face, tongue; headache, fatigue, nauseas, vomiting, tremors, convulsions; a suspect carcinogen
			• Reacts with strong acids and oxidizers, thermal decomposition can release toxic fumes of Cl

CHEMICAL	EXPOSURE ROUTES	PEL/TLV	HEALTH HAZARDS/ PHYSICAL HAZARDS
Dibenzofuran	Inhalation, ingestion	N/E	• A poison by ingestion; a skin and eye irritant; chloracne; an experimental teratogen
			• Thermal decomposition releases toxic gasses
1,2 Dichloroethene	Skin, eye, Inhalation, ingestion	793 ppm	• Irritation from skin contact, headache, nausea, vomiting, dizziness, and central nervous system depression; Long term exposure can effect the kidneys and liver
			• Flammable liquid, keep away from sources of ignition. Will liberate toxic phosgene gas and hydrogen chloride when heated; A void contact with strong oxidizers and bases, aluminum, ammonia, and nitric acid
Diesel fuel	Skin, eye, Inhalation, ingestion	ND	• Ingestion causes nausea, vomiting and cramps; CNS depression, headache, coma, death. Inhalation causes pulmonary irritation, lightheadedness. Aspiration causes severe lung irritation and coughing. Irritant to the skin and mucus membranes.
			• Incompatible with strong oxidizing agents; heating greatly increases the fire hazard.
1,4-Dichlorobenzene	Skin, eye,	10 ppm	• An animal carcinogen; irritation, swelling of the eyes, nasal discharge, headache, nausea, vomiting, jaundice
	Inhalation, Ingestion		• Strong oxidizers (permanganate and chlorine) emits toxic gases during thermal decomposition
Ethylbenzene	Skin, eye, inhalation ingestion	100 ppm	• A strong eye, sl,in mucus membrane irritant. Dermatitis, headache, dizziness, sleepiness, narcosis, coma; CNS depression
		125 ppm	• Reacts with strong oxidizers, flammable liquid, releases toxic gases during combustion
Fuel Oil #6	Skin, eye, inhalation ingestion	5 mg/m^3 (mineral oil mist)	• Irritating to skin, eyes, respiratory tract; headache, dizziness, nausea, vomiting and loss of coordination; an acne like rash, pimples around hair follicles; ingredients of fuel oils may be carcinogens

CHEMICAL	EXPOSURE ROUTES	PEL/TLV	HEALTH HAZARDS/ PHYSICAL HAZARDS
			• Incompatible with strong oxidizing agents; thermal decomposition releases, toxic gases
Kerosene	Skin, eye, inhalation ingestion	100 mg/m³	• A skin, eye and respiratory irritant; a burning sensation in the chest; dermatitis; headache, nausea, vomiting, weakness, drowsiness, confusion
			• A flammable liquid; explosive vapor, can flash back to fuel source; reacts violently with oxidizers, peroxides, nitric acid and per chlorates; combustion produces toxic gases
Lead	Inhalation, ingestion	0.050 mg/m³	• Weakness, insomnia; loss of appetite, loss of weight, abdominal pain; anemia; tremors; weakness of wrists/ankles; kidney damage; low blood pressure
			• Incompatible with strong oxidizers, hydrogen peroxide and acids
Manganese	Skin, eye, inhalation	0.2 mg/m³	• A respiratory irritant; dry throat, cough, tight chest; nausea, vomiting, mental confusion, flu-like fever, CNS
	ingestion		• Reacts with oxidizers; displaces hydrogen from water and steam creating potential fire, explosion hazards.
Petroleum Hydrocarbons	Skin, eye, inhalation ingestion	300 ppm	• Gasoline mixtures contain probable human carcinogens (benzene and toluene); a skin, sys, respiratory, mucus membrane irritant; headache, dizziness, nausea, staggering, unconsciousness, convulsions, chemical pneumonis, liver and kidney damage.
			• A flammable liquid, explosive vapors can flash back to fuel source; reacts violently with oxidizers, peroxides nitric acid, and perchlorates.
Polychlorinated Biphenyls	Skin, eye, inhalation, ingestion	0.5 mg/m³	• PCBs vary from mobile oily liquids to white crystalline solids and hard non-crystalline resins, depending on chlorine content. VP: Imm, LEL/UEL:?
			• Irritation of eyes, skin; acne-form dermatitis; potential carcinogen; liver damage

			• Reacts with strong oxidizers
CHEMICAL	**EXPOSURE ROUTES**	**PEL/TLV**	**HEALTH HAZARDS/ PHYSICAL HAZARDS**
1,1,1,2 Tetrachloro ethane	Skin, eye inhalation	1 ppm	• A skin and eye irritant; causes weakness, irregular respiration, loss of muscular coordination; possible liver dysfunction
			• Reacts with sodium, potassium, oxidizers. Oxidizing agents; thermal decomposition releases toxic gases, Cl-
1,1,2,2,- Tetrachloroethane	Skin, eye, inhalation ingestion	1 ppm	• A skin, eye irritant; dermatitis; headache, nausea, vomiting, abdominal pain; narcosis, tingling, numbness in limbs, fingers; jaundice
			• Reacts with strong caustics, light metals (sodium potassium,.....), petroleum (fuming sulfuric acid); releases toxic gases during combustion, thermal decomposition
1,1,1,- Trichloroethane	Skin, eye, inhalation, ingestion	350 ppm	• Headache, dizziness, visual disturbances tremors sleepiness, nausea, vomiting, irritation of eyes, dermatitis, cardiac arrhythmia, numbness/tingling of hands, feet, potential carcinogen
			• Reacts with strong acids and bases, metals; flammable liquid
Trichloroethylene	Skin, eye, inhalation	50 ppm	• A skin and eye irritant; dermatitis; headache, vertigo, visual distortion, fatigue, nausea, vomiting irregular heart rhythm
	ingestion		• A dangerous fire hazard, reacts with strong caustics and chemically reactive metals, will emit toxic phosgene gas when heated
Toluene	Skin, eye	50 ppm	• White odorless powder. VP: 0, LEU VEL: NA
	inhalation, ingestion	500 ppm	• Fatigue, weakness, confusion, euphoria, dizziness, headache, dilated pupils, insomnia, numbness/tingling in hands, feet, dermatitis
			• Reacts with strong oxidizers; flammable liquid; releases toxic gases during combustion
Vinyl Chloride	Skin, eye, inhalation	1 ppm	• A carcinogen: headache, vertigo, narcosis, collapse; affects CNS; skin and eye irritation

CHEMICAL	EXPOSURE ROUTES	PEL/TLV	HEALTH HAZARDS/ PHYSICAL HAZARDS
	Ingestion		A severe fire and explosion hazard; reacts with copper, aluminum, and hydroquinone; forms toxic decomposition products when involved with fires or heat; HC1, carbon monoxide, and phosgene
Xylene	Skin, eye, inhalation, ingestion	100 ppm	• Dizziness, excitement, drowsiness, incoherent, staggering walk; eye, nose, throat irritation; nausea, vomiting, dermatitis.
			• Flammable; reacts with strong oxidizers.
Zinc	Inhalation, ingestion	10.0 mg/m3	• A skin, eye, and respiratory irritant; a nuisance dust; health effects primarily from fume inhalation, metal fume fever; chromate's of zinc are human carcinogens

The following general symptoms may indicate exposure to a hazardous chemical. Personnel will be removed from the work site and provided immediate medical attention if the following symptoms occur:

- Dizziness or stupor
- Nausea, headaches, or cramps
- Irritation of the eyes, nose, or throat.
- Chest pains and coughing
- Rashes or burns

4.2 HAZARD COMMUNICATION

The purpose of hazard communication (Employee Right-to-Know) is to ensure that the hazards of all chemicals located at this field project site are transmitted (communicated) according to 29 CFR 1926.59 to all personnel and subcontractors. Hazard communication will include:

4.2.1 Container Labeling

EEI personnel will ensure that all drums and containers are labeled according to contents. These drums and containers will include those from manufacturers and those produced on site by operations. All incoming and outgoing labels shall be checked for identity, hazard warning, and name and address of responsible party.

4.2.2 Material Safety Data Sheets (MSDSs)

There will be an MSDS located on site for each hazardous chemical known to be used on site. All hazardous chemical MSDSs will also be located in the office trailer. The site safety plan can be found in the project office trailer.

4.2.3 Employee Information and Training

Training employees on chemical hazards is accomplished through on ongoing corporate training program. Additionally, chemical hazards are communicated to employees through daily safety meetings held at EEI field projects and by an initial site orientation program.

At a minimum, EEI and related subcontractor employees will be instructed on the following:

- An in-depth review of the soil and surface contaminants of concern identified listed in Section 4.1.
- OSHA regulated chemicals and their hazards in the work area
- How to prevent exposure to these hazardous chemicals
- What the company has done to prevent workers' exposure to these chemicals
- Procedures to follow if they are exposed to these chemicals
- How to read and interpret labels and MSDSs for hazardous substances found on EEI sites
- Emergency spill procedures
- Proper storage and labeling

Before any new hazardous chemical is introduced on site, each EEI and related subcontractor employee will be given information in the same manner as during the safety class. The site supervisor will be responsible for seeing that the MSDS on the new chemical is available for review by on site personnel. The information pertinent to the chemical hazards will be communicated to project personnel.

Morning safety meetings will be held and the hazardous materials used on site will be discussed. Attendance is mandatory for all on site employees.

4.3 PHYSICAL HAZARDS

To minimize physical hazards, EEI has developed standard safety protocols that will be followed at all times. Failure to follow safety protocols will result in removal of an employee from the site and appropriate disciplinary actions.

The SS and SSO will observe the general work practices of each crewmember and equipment operator, and enforce safe procedures. The crew leaders and SS will inspect work areas. All hazards will be corrected in a timely manner. A variety of physical hazards may be encountered during work activities at this site. Activity Hazard Analyses will be developed for each principal activity and will identify all major hazards to which employees may be exposed. Hard hats, safety glasses, and steel toe safety boots are required in all areas of the site. Site-specific hazards and all necessary precautions will be discussed at the daily safety meetings.

4.3.1 Safety and Environmental Hazards

Physical hazards include Safety and Environmental hazards. The following physical hazards may be present during project activities:

- Heat stress
- Cold Stress
- Biological hazards (Poison Ivy, Ticks, Lyme Disease)
- Manual lifting/back strain

- Vehicle Traffic
- Noise
- Heavy equipment operations
- Excavation
- Confined Space Entry
- Control of Hazardous Energy Sources
- Fall Protection
- Lightening
- Possible UXO

Heat stress Prevention procedures will be implemented. Personal noise exposures will be controlled by instituting the Hearing Conservation Program. Confined Space Entry Procedures will be followed and the control of hazardous energy sources will be in accordance the Site Specific Lockout/Tag out/Try Program. Fall Protection is outlines in the Site Specific Fall Protection Plan. The Fall Protection Plan will be updated as necessary to address current site hazards.

4.4 LIGHTNING

The procedures provided below will be used to protect site personnel from lightning related injuries.

4.4.1 Training

A tailgate safety meeting will be conducted to increase awareness to the hazards and prevention of lightning related incidents.

4.4.2 Detection of Lightning

The Site Supervisor will be proactive in monitoring conditions that may produce thunderstorms and lightning. A daily and weakly weather forecast will be tracked and communicated to site personnel. When signs of impending storms, i.e., increasing wind, darkening skies, or lightening appear, local weather monitoring will be increased. The National Weather Service (www.nws.noaa.gov) should be consulted frequently. Personnel will be notified when thunderstorms may impact the site.

The "flash bang" (f/b) technique of measuring the distance to lightning will be reviewed with all personnel. The f/b technique is defined as: for each five seconds from the time of observing the lightning flash to hearing the associated thunder, the lightning is one mile away.

4.4.3 Suspension/Resumption of Activities

All outside activities will be suspended when a lightning flash is immediately in the area or a f/b of 20 seconds (4 miles away) is noted. Personnel may continue indoor work activities. Outdoor activities will resume when 30 minutes has passed since the last observable f/b is 20 seconds or greater.

4.4.4 Lightning Protection

When notification is given, all outside work activities will stop and personnel will gather in the support zone for a head count and further instructions. Indoor work will continue, except for the use of electrical equipment, telephones and computers. When a safe location is not present and personnel are caught by a sudden lightning event, employees should seek the lowest possible area, away from large objects which might attract lightning or fall over, e.g., trees, utility poles. The employee should assume a crouching

position with their head lowered and hands over their ears. AVOID: WATER, HIGH GROUNDS,

HEAVY EQUIPMENT AND TALL, ISOLATED OBJECTS.

4.4.5 First Aid

An employee that is struck by lightning needs immediate assistance (call 911). The body will not carry an electrical charge, but receives a sever electrical shock and may be burned. Personnel certified in first aid/CPR should inspect for shock and burns around fingers, toes, buckles and jewelry. Stay with the injured employee until medical help arrives.

4.5 VEHICLE SAFETY MANAGEMENT

Motor vehicle incidents are the number one cause of occupational fatalities, accounting for one in three deaths. Fifty percent or more of vehicle safety incidents occur while backing up. EEI employees involved in the operation and use of EEI and/or leased or rented vehicles will comply with the *EEI Motor Vehicle/Commercial Vehicle Operation and Maintenance Procedures*. EEI requires employees to use seat belts at all times when traveling in EEI owned or leased/rented vehicles. The SS and/or SSO will develop a parking area plan, including backing vehicles into parking spaces, using spotters for backing vehicles and policy mandated vehicle inspections.

EEI employees are expected to incorporate safe actions and preparations to avoid vehicle accidents and personal injury during work and off-hours. Breaks should be planned into lengthy job mobilizations and demobilizations, including rotation of drivers at regular intervals. If parking areas are busy or crowded and more than one worker is traveling in the same vehicle, one worker should remain outside the vehicle as it leaves the parking space to assist the driver with traffic observation. Vehicles traveling before dawn and at dusk in rural or wooded areas should be prepared for wildlife, e.g. deer crossing roadways.

EEI employees arriving at work areas should park vehicles away from delivery, heavy equipment and vehicle loading/unloading locations to prevent parked vehicles from damage by various deliveries. Heavy equipment operators should inspect areas and request vehicles to be moved or spotters used if necessary, to maneuver equipment in tight areas. Employees who observe near misses or potential risks to parked or moving vehicles must report these to the SS or SSO immediately.

EEI employees are expected to use the vehicle inspection form and check/test the safety systems on the vehicle on a daily basis. Check the following: brakes, mirrors, seat belts, tires, leakage from the undercarriage, lights and turn signals. Vehicles with safety deficiencies must be reported immediately and not driven until properly repaired. Vehicles running errands from different project sites should have telephone numbers of the job site in the vehicle in case calls for assistance are required.

Because of the different ways alcohol can affect behavior, even in very small amounts, the best and safest course is not to drink before driving. At EEI, a driver with blood alcohol concentration (BAC) over 0.04% is considered to be under the influence and subject to disciplinary action. Personnel involved in motor vehicle incidents are subject to drug and alcohol testing.

Weather conditions can have a profound effect on driving. On slippery roads, drive more slowly. Stop and turn with care. Keep several car lengths from other vehicles. At speeds in excess of 35 mph, the chances of hydroplaning increase with speed. In general, keep back 1 car length for every 10 mph to prevent striking the car ahead.

Vehicles will be operated in accordance with the requirements listed below:

- Seatbelt use is mandatory for all passengers;
- Personnel may not ride in the back of cargo vehicles;
- The driver must make a 360 degree walk around the assigned vehicle prior to vehicle movement;
- A ground guide is used to back up any vehicle;
- Vehicle speed is limited to the posted speed limits for developed roadways, 25 mph maximum on dirt roads and 10 mph maximum off-road (based on conditions);
- Vehicle driven in four wheel low and low gear when on dirt roads or off road driving where steep grades dictate;
- All operators must possess a valid driver's license;
- Fuel or gasoline are not transported inside the passenger compartment;
- No vehicle is left running when unattended; and
- Parking brakes are used when vehicles are parked.

In the event of a vehicle incident, notify your Site Supervisor *immediately* and complete all required reports.

4.6 ACTIVITY HAZARD ANALYSES

Appendix B contains Activity Hazard Analyses (AHA) for primary site tasks. They contain detailed information on physical and chemical hazards, and provide control measures for these hazards. The AHA's will be field checked by the SS/SHSS on an ongoing basis and revised as necessary. All revisions will be communicated to the work crew.

5.0 WORK AND SUPPORT AREAS

To prevent migration of contamination from personnel and equipment, work areas will be clearly specified as designated below prior to beginning operations. Each work area will be clearly identified using signs or physical barriers.

- Exclusion Zone Contamination (EZ)
- Reduction Zone Support Zone (RZ)

A log of all personnel visiting, entering or working on the site shall be maintained by the SSO. No visitor will be allowed in the EZ without showing proof of training and medical certification, per 29 CFR 1910.120(e), (f) and 29 CFR 1926.65. Visitors will attend a site orientation given by the SSO and sign the HASP.

The following are standard safe work practices that apply to all site personnel and will be discussed in the safety briefing prior to initiating work on the site:

- Eating, drinking, chewing gum or tobacco, smoking is prohibited in the EZ/RZs.
- Hands and face must be washed upon leaving the EZ and before eating, drinking, chewing gum or tobacco and smoking.
- A buddy system will be used. Hand signals will be established to maintain communication.
- During site operations, each worker will consider himself as a safety backup to his partner. Off-site personnel provide emergency assistance.
- Visual contact will be maintained between buddies on site when performing hazardous duties.
- No personnel will be admitted to the site without the proper safety equipment, training, and medical surveillance certification.
- All personnel must comply with established safety procedures. Any staff member who does not comply with safety policy, as established by the SS, will be immediately dismissed from the site.
- Proper decontamination procedures must be followed before leaving the site.
- All employees and visitors must sign in and out of the site.

6.0 PROTECTIVE EQUIPMENT

This section specifies the levels of personal protective equipment (PPE) that are or may be required for each principal activity performed at this site. The specific PPE required for each Task will be modified as appropriate for the site-specific conditions. The level of protection for each task will be clearly outlined in the specific addenda to this plan for the work activities. All site personnel must be trained in the use of all PPE utilized. The PPE program will be applied to project activities.

6.1 PROTECTION LEVEL DESCRIPTIONS

This section lists the minimum requirements for each protection level.

6.1.1 Level D

Level D consists of the following:

- Safety glasses with side shields
- Hard hat
- Steel-toed work boots
- Work clothing as prescribed by weather

6.1.2 Modified Level D

Modified Level D consists of the following:

- Safety glasses with side shields
- Hard hat
- Steel-toed work boots
- Protective coveralls
- Protective Poly-coated Coveralls (when handling liquid contaminants)
- Chemical resistant overboots
- Nitrile inner liner gloves
- Nitrile outer gloves
- Face shield and goggles (when projectiles or splashes pose a hazard)
- Rain gear if necessary

6.1.3 Level C

Level C consists of the following:

- Full-face, air-purifying respirator with appropriate cartridges
- Hooded coveralls suited for the contamination involved Hard hat
- Steel-toed work boots
- Nitrile, neoprene, latex or PVC overboots
- Nitrile, neoprene, or PVC gloves over latex sample gloves
- Wrists and ankles must be taped

6.1.4 Level B

Level B protection consists of the following:

- Full face air supplied respirator with 5 minute escape pack, face seal taped to hood (chemical resistant tape)
- Hard hat
- Steel-toed work boots
- Saranex Tyvek coveralls (hood), zipper and neck area taped (chemical resistant tape)
- Chemical resistant overboots , cuffs taped
- Two pair of nitrile inner liner gloves
- Nitrile outer gloves
- Cut resistant gloves when handling sharp objects or broken glass

6.1.5 Level A

Level A protection consists of the items required for Level B protection with the addition of a fully encapsulating, vapor-proof suit capable of maintaining positive pressure.

6.2 AIR PURIFYING RESPIRATORS (APRS)

A NIOSH approved full-face respirator with appropriate air purifying cartridges will be used for level C work. The specific cartridges will be selected based on the identification of air contaminants and their concentrations. The crew members working in Level C will wear respirators equipped with air-purifying cartridges approved for: organic vapors <1,000 ppm; chlorine gas 10 ppm; hydrogen chloride <50 ppm; sulfur dioxide <50 ppm; dusts, fumes and mists with a TWA <0.05 mg/m3; asbestos-containing dusts and mists and radionuclides.

For petroleum hydrocarbons, cartridges will be thrown away at the end of 8 hours based on Survivair manufacturer recommendations. However, the presence of chlorinated solvent concentrations will trigger engineering controls and/or a possible upgrade to Air Supplied Respirators. The cartridges will be changed in accordance for the service life calculations performed either by the Health and Safety Coordinator, Health and Safety Manager, or Program Industrial Hygienist.

6.3 SUPPLIED AIR RESPIRATORS

If air monitoring shows that level B protection is needed, personnel will wear Survivair 9881-02 Hippack Airline respirators with 5-minute egress bottles. Personnel requiring Level B protection and high mobility will wear Survivair Mark 2 SCBA units.

6.4 BREATHING-AIR QUALITY

Code of Federal Regulations 29 CFR 1910.134 states breathing air will meet the requirements of the specification for Grade D breathing air as described in the ANSI/CGA Specification G-7 .1-1989. A certificate of analysis from the vendors of breathing air in order to show that the air meets this standard is required. Breathing air will be obtained in cylinders exclusively and will be stationed in the exclusion zone (EZ).

7.0 DECONTAMINATION PROCEDURES

This section describes the procedures necessary to ensure that both personnel and equipment are free from contamination when they leave the work site.

7.1 PERSONNEL DECONTAMINATION

Decontamination procedures will ensure that material that workers may have contacted in the EZ does not result in personal exposure and is not spread to clean areas of the site. This sequence describes the general decontamination procedure. The specific stages will vary depending on the site, the task, and the protection level, etc.

7.1.1 Level D Decontamination

1) Go to end of EZ
2) Remove and discard latex booties
3) Remove outer gloves and discard
4) Remove protective suit (if applicable)
5) Remove inner sample gloves and discard
6) Wash face and hands

7.1.2 Level C Decontamination

1) Go to end of EZ
2) Wash outer boots (Tingley or Robars)
   a. Stage to let dry; or
   b. Remove and discard latex booties
3) Remove outer gloves and discard
4) Remove outer suit (Saranex/polycoatedJregu1arTyvek)
5) Remove outer sample gloves and discard
6) Cross into RZ (dirty side of respirator wash area)
7) Remove inner suit and discard, (if applicable)
8) Remove and wash respirator (4 stages)
   a. Soap and water solution
   b. First rinse
   c. Disinfect respirator (1 cap full of bleach to 1 gallon of water)
   d. Final rinse
   e. Hang respirator to dry
   f. Remove inner sample gloves and discard
   g. Wash face and hands

7.1.3 Level B Decontamination (Airline/Egress)

1) Go to end of EZ
2) Step into the 1st decontamination pool.
3) Wash outer boots and outer gloves with a sodium bicarbonate/water solution
4) Step into 2nd decontamination pool
5) Wash exterior of suit with copious amounts of water until all apparent contamination is removed.
6) Step into 3rd decontamination pool

7) Decontamination assistant will inspect suit and collect a pH paper swipe to determine if decontamination was effective
8) If additional decontamination is required, the person will be washed with a sodium
9) Step out of the 3rd pool.
10) a. Remove outer boots and stage to let dry; or
    b. Remove and discard latex booties
11) Remove outer gloves and discard
12) Cross into RZ
13) Disconnect airline, remove egress system, and disconnect egress from mask
14) Stage egress bottle for cleaning
15) Remove outer suit
16) Remove outer sample gloves and discard
17) Move to respirator wash area, and wash egress mask and related hose line
    a. Soap and water solution
    b. First rinse
    c. Disinfect respirator (1 cap full of bleach to 1 gallon of water)
    d. Final rinse
18) Hang egress mask (upside down) and line to dry
19) Remove inner sample gloves and discard.
20) Wash face and hands

7.1.4 Level B Decontamination (SCBA)

1) Move to edge of EZ
2) Bottle change only
    a. Wash boots and gloves
    b. Move to edge of EZ and RZ
    c. Remove face mask airline from regulator assembly
    d. Allow assistant to change bottle and reconnect face mask airline
    e. Return to EZ
3) Exit from area.
4) Go to end of EZ
5) Step into the 1st decontamination pool.
6) Wash outer boots and outer gloves with a sodium bicarbonate/water solution
7) Step into 2nd decontamination pool
8) Wash exterior of suit with copious amounts of water until all apparent contamination is removed.
9) Step into 3rd decontamination pool
10) Decontamination assistant will inspect suit and collect a pH paper swipe to determine if decontamination was effective
11) If additional decontamination is required, the person will be washed with a sodium bicarbonate/water solution in the 3rd pool until the pH swipe indicates a neutral or basic pH has been achieved.
12) Step out of the 3rd pool.
13) a. Remove outer boots and stage to let dry; or
    b. Remove and discard latex booties
14) Remove and discard outer gloves
15) Disconnect from SCBA bottle and stage SCBA (NOTE: SCBA mask remains on)
16) Remove outer suit

17) Remove outer sample gloves and discard
18) Cross into RZ
19) Remove inner suit (if applicable)
20) Move to respirator wash area and wash SCBA face piece and hose line
    a. Soap and water solution
    b. First rinse
    c. Disinfect respirator (1 cap full of bleach to 1 gallon of water)
    d. Final rinse
21) Hang mask to dry
22) Remove inner sample gloves and discard
23) Wash face and hands

7.1.5 Level A Decontamination (Airline/Egress)

1) Go to end of EZ
2) Step into the 1st decontamination pool
3) Wash outer boots and outer gloves with a sodium bicarbonate/water solution
4) Step into 2nd decontamination pool
5) Wash exterior of suit with copious amounts of water until all apparent contamination is removed
6) Step into 3rd decontamination pool
7) Decontamination assistant will inspect suit If additional decontamination is required, the person will be washed and or neutralized if applicable
8) Step out of the 3rd pool. Decontamination assistant will unzip the suit and assist the person in removal
9) Cross into RZ
10) Disconnect airline, remove SCBAlegress system, and disconnect egress from mask
    Stage SCBA bottle for cleaning
11) Remove inner suit
12) Remove outer sample gloves and discard
13) Move to respirator wash area, and wash egress mask and related hose line
    a. Soap and water solution
    b. First rinse
    c. Disinfect respirator (1 cap full of bleach to 1 gallon of water)
    d. Final rinse
14) Hang egress mask (upside down) and line to dry
15) Remove inner sample gloves and discard
16) Wash face and hands

7.1.6 Suspected Contamination

Any employee suspected of sustaining skin contact with chemical materials will first use the emergency shower. Following a thorough drenching, the worker will proceed to the decontamination facility. Here the worker will remove clothing, shower, put on clean clothing, and immediately be taken to the first-aid station. Medical attention will be provided based on the degree of injury.

7.1.7 Personal Hygiene

Before any eating, smoking, or drinking, personnel will wash hands, arms, neck and face.

7.2 EQUIPMENT DECONTAMINATION

All contaminated equipment will be decontaminated before leaving the site. Decontamination procedures will vary depending upon the contaminant involved, but may include sweeping, wiping, scraping, hosing, or steaming the exterior of the equipment. Personnel performing this task will wear the proper PPE as prescribed by the SSO.

7.3 DISPOSAL

All decontamination liquids and disposable clothing will be treated as contaminated waste unless determined otherwise by accepted testing methods. Wastes will be disposed of according to state and federal regulations.

7.3.1 Suspected Contamination

Any employee suspected of sustaining skin contact with chemical materials will remove clothing, shower, put on clean clothing, and immediately be taken to the first-aid station. Medical attention will be provided based on the degree of injury.

Before any eating, smoking, or drinking, personnel will wash hands, arms, neck and face.

8.0 AIR MONITORING

Air monitoring will be conducted in order to characterize personnel exposures and fugitive emissions from site contaminants. Principal contaminants of concern are listed in Section 4.0 of this HASP. The target compounds selected for air monitoring purposes will be clearly outlined in the specific addenda to this plan for the proposed work activities. Results of air monitoring will be used to ensure the proper selection of protective clothing and equipment, including respiratory protection, to protect on-site personnel and off-site receptors from exposure to unacceptable levels of site contaminants.

8.1 WORK AREA MONITORING

Work area air monitoring at the MCB, Camp Lejeune will include both direct reading and personal air methods. Air monitoring will be clearly outlined in the specific addenda to this plan for the proposed work activities.

8.1.1 Direct Reading Air Monitoring

During work activities air monitoring will be performed in the EZ to determine exposure to workers. A FID/PID meter will be used to monitor for toxic vapors. Colorimetric tubes will be used to identify specific compounds (i.e.: benzene). A Particulate Meter (i.e.: Mini ram, Data ram) will be used to monitor for airborne particulates. A LEL/02 meter will be available to test for potential combustible vapors and to check oxygen levels. Hydrogen Sulfide and Hydrogen Cyanide meters will be used to monitor for the specific compounds.

8.2 INSTRUMENTATION

The following is a description of the air monitoring equipment to be used at this site.

8.2.1 Flame Ionization Detector (FID)

8.2.1.1 Type and Operational Aspects

The instrument utilizes the principle of hydrogen flame ionization for detection and measurement of organic vapors. The instrument measures organic vapor concentration by producing a response to an unknown sample, which can be related to a gas of known composition to which the instrument has previously been calibrated. During normal survey mode operation, a continuous sample is drawn into the probe and transmitted to the detector chamber by an internal pump.

The sample stream is metered and passed through particle filters before reaching the detector chamber. Inside the detector chamber, the sample is exposed to a hydrogen flame that ionizes the organic vapors. When most organic vapors burn, they leave positively charged carbon-containing ions. An electrical field drives the ions to a collecting electrode. As the positive ions are collected, a current corresponding to the collection rate is generated. This current is the ionization current. A signal-conditioning amplifier is used to amplify the signal from the pre-amp and to condition it for subsequent meter or external recorder display. The display is an integral part of the Readout Assembly and has 270-degree scale deflection.

8.2.1.2 Calibration Menthol/Frequencies

At the time of manufacture, the analyzer is calibrated to mixtures of methane in air. For precise analysis it is necessary to recalibrate with the specific compound of interest. The GAS SELECT control is used for a particular compound. The instrument is re-calibrated using a mixture of a specific vapor in air, with known concentration. After the instrument is in operation and the normal background is zeroed, draw a sample of the calibration gas into the instrument. The GAS SELECT control on the panel is then used to set the readout meter indication to correspond to the concentration of the calibration gas mixture.

8.2.1.3 Preventative Maintenance

The primary maintenance is the recharging of the battery and filling of the hydrogen cylinder. The recommended charging time for the FID is one hour of charging time for every hour of use. The FID uses zero grade hydrogen for fuel. It is recommended that refueling of the FID be performed in a ventilated area. The pressure within the hydrogen supply tank and the hydrogen tank should be monitored closely.

8.2.2 Photoionization Detector (PID)

8.2.2.1 Type and Operational Aspects

Principle of Operation

Ionization potential (IP) - The energy required to remove the outermost electron from a molecule; measured in electron volts (e V); characteristic property of a specific chemical.

Photoionization - Using ultraviolet (UV) light to remove the outermost electron from a molecule.

Energy of UV light (10.2,9.5, 11.7 eV) must be equal to or greater than the IP to photo ionize the molecule.

Fan or pump is used to draw air into the detector where the contaminants are exposed to an UV light source (lamp).

Ions are collected on a charged plate and produce a current directly proportional to the number of ionized molecules; current is amplified and displayed on the meter.

8.2.2.2 Calibration Method/Frequencies

The PID Model PIIO 1 is designed for trace gas analysis in ambient air and is calibrated at HNU with certified standards of benzene, vinyl chloride, and isobutylene. Other optional calibrations are available (e.g., ammonia, ethylene oxide, H2S, etc.).

EEI will use a PID with a 10.2 eV lamp. This lamp has been determined to be most responsive to the contaminants on site. Optional probes containing lamps of 9.5 and 11.7 eV are interchangeable in use within individual read-out assemblies for different applications.

The approximate span settings for the probe that would give different readings of the amounts of trace gas of a particular species in a sample are based upon the relative photo ionization sensitivities of various gases twice daily (beginning and end of shift).

It is recommended that calibration be checked twice each day (beginning and end of shift). The SSO will record and log such calibration information into an air-monitoring notebook.

8.2.2.3 Preventative Maintenance

Maintenance of the PID Model PIIO 1 consists of cleaning the lamp and ion chamber, and replacement of the lamp or other component parts or sub-assemblies.

8.2.3 Drager Multi Gas Detector Model 21/31

8.2.3.1 Principle of Operation

- Colonnetric indicator tubes (detector tubes) consist of a glass tube impregnated with an indicating chemical.
- Tube is connected to a piston or bellow pump to draw a know volume of air through the tube. Contaminant reacts with the indicator chemical in the tube, producing a change in color whose length is proportional to the contaminant concentration; glass tube has degradations in ppm to match the

length of stain.
- Preconditioning filter may precede the detector tube to remove interfering contaminants (i.e. benzene, vinyl chloride).

8.2.3.2 Calibration Methods Frequencies
There is no method or procedure for calibrating any colonnetric detector tube. However, it is important to read the instructions provided with a specific detector tube to determine number of pump strokes, interfering chemicals, proper color change, and shelf life. It is important that the number of strokes is not exceeded on the first measurement, as this may overload the tube and overshoot the standard range of measurement.

Sampling pump can be checked but not calibrated using the bubble tube. All bellows pumps draw in a specific amount of air during each stroke. This amount should correspond to a specific amount on the bubble tube (i.e., if one stroke equals 100 cc, then the bubble should move 100 cc in the bubble tube). Also, a leak check can be conducted by activating a pump stroke, then inserting an unopened colonnetric tube in the pump inlet. The pump should not move, if it does, this indicates a leak. If the pump fails either the leak test or the volume test, return it back to the manufacturer for repair.

8.2.3.3 Preventative Maintenance
Generally speaking, the reagent of the colormetric tubes cannot be stored for unlimited periods. The shelf life of the Drager tubes is, therefore, limited to two years (for storage at room temperature).

8.2.3.4 Time Aerosol Monitor (Mini Ram Model PDM-3 and Model PrlOO Data Ram)

8.2.3.5 Type And Operational Aspects
Principle of Operation:

- Detection of light in the near infrared region back-scattered to a sensor (photovoltaic detector) by airborne particulate in a sensing volume
- The higher the dust concentration the more back-scattering of light to the sensor, resulting in increased readings
- Device calibrated at the factory against an air sampling filter/gravimetric analysis reference method

8.2.3.6 Calibration Methods Frequencies
There is no calibration method or procedure for calibrating the mini-ram monitor. However, it is recommended that the mini-ram monitor be re-zeroed once a week. During a zero check, the sampled air passes through the purge air filter and dryer to effect a self-cleaning of the optical chamber.

8.2.3.7 Preventative Maintenance
Maintenance of the mini-ran consists of replacement of filters and desiccant; battery replacement; and cleaning of the optical detection assembly.

8.2.4 Lower Explosive Limit/Oxygen (LEL/02) Meter

8.2.4.1 Types and Operational Aspects
MSA Watchman LEL/02 Meter or equivalent

8.2.4.2 Principle of Operation
- Oxygen detector uses an electrochemical sensor; produces a minute electric current proportional to the oxygen content.
- Combustible gas indicators use a combustion chamber containing a filament that ignites flammable vapors; filament is heated or coated with a catalyst (platinum) to facilitate combustion.
- Filament is part of a balanced resistor circuit; combustion in the chamber causes the filament

temperature to increase; results in increased filament resistance.

- Change in the filament's resistance causes an imbalance in the circuit proportional to the percent of the lower explosive limit (% LEL).
- Concentrations greater than the LEL and lower than the upper explosive limit (VEL) will read 100% LEL; combustible atmosphere present.
- Concentrations greater than the VEL will read above 100% LEL then return to zero. (NOTE: Some devices have catchments mechanisms that will cause the needle to remain at 100% until the meter is reset.) This type of response indicates the gas mixture is too rich to burn and is not combustible. The danger is that the addition of air to the gas mixture could bring it into the flammable range (less than the VEL).
- Oxygen meter set at the factory to alarm at 19.5% (oxygen deficient atmosphere) combustible gas meter set by the user to alarm at 10% LEL.

8.2.4.3 Calibration Methods Frequencies

Before the calibration of the combustible gas indicator can be checked, the unit must be in operating condition. The combustible gas indicator (LEL) is normally calibrated on pentane as being representative of the flammability characteristics of most commonly encountered combustible gases. The meter scale is calibrated from zero to 100% LEL, which corresponds in actual volume concentrations of 0 to approximately 14% pentane in air. A booklet of response curves is supplied with the Watchman Meter. These curves may be used to interpret meter readings when sampling combustible gases other than pentane.

It is recommended that calibration be checked before and after using each time. The SHSS will record and log such calibration information into an air-monitoring notebook. The O2 meter is calibrated by adjusting the O2 control knob to 20.8% while the meter is operated in a fresh air atmosphere.

8.2.4.4 Preventative Maintenance

The primary maintenance of unit is the rechargeable 2.4-volt nickel cadmium battery. Recommended charging time is 16 hours. It may be left on charge for longer periods without damaging the battery.

The battery sometimes will not supply full power capacity after repeated partial use between charging. Therefore, it is recommended that the battery be exercised at least once a month by running for eight to 10 hours and recharged. If the instrument has not been used for 30 days, the battery should be charged prior to use.

8.2.5 Hydrogen Cyanide Monitor

Hydrogen cyanide (HCN) monitors are required to measure personnel breathing zones when site personnel are potentially exposed to HCN during site remedial operations. An action level of 5 ppm for 5 minutes requires an upgrade to Level B protection because air-purifying respirators are not appropriate for HCN exposures. An HCN action level of 25 ppm for 5 minutes requires operations to be shut down until HCN vapors vent to less than 25 ppm. The 25-ppm HCN action level represents 50 percent of the published "Immediately Dangerous to Life and Health" (IDLH) atmosphere for HCN.

8.2.6 Hydrogen Sulfide Monitor

Hydrogen sulfide monitors are required to measure personnel breathing zones when site personnel are potentially exposed to H2S during site remedial operations. An action level of 5 ppm for 5 minutes requires an upgrade to Level B protection because air-purifying respirators are not appropriate respiratory protection for H2S exposures. An H2S action level of 150 ppm for 5 minutes requires operations to be shut down until H2S vapors vent to less than 150 ppm. The 150-ppm H2S action level represents 50 percent of IDLH atmosphere for H2S.

8.3 AIR MONITORING LOG

The SHSS will ensure that all air-monitoring data is logged into a monitoring notebook. Data will include instrument used, wind direction, work process, etc. The EEI HSM may periodically review this data.

8.4 CALIBRATION REQUIREMENTS

The FlD/PID, Mini ram, HCN, H2S and LEL/02 meters will be calibrated daily before and after use. A separate log will be kept detailing date, time, span gas, or other standard, and name of person performing the calibration.

8.5 AIR MONITORING RESULTS

Air monitoring results will be posted for personnel inspection, and will be discussed during morning safety meetings.

9.0 EMERGENCY RESPONSE

9.1 PRE-EMERGENCY PLANNING

Prior to engaging in construction/remediation activities at the site, EEI will plan for possible emergency situations and have available adequate supplies and manpower to respond. In addition site personnel will receive training during the site orientation concerning proper emergency response procedures.

The following situations would warrant implementation of the Emergency Response and Contingency Plan (ERCP):

Fire/Explosion	• The potential for human injury exists. • Toxic fumes or vapors are released. • The fire could spread on site or off site and possibly ignite other flammable materials or cause heat-induced explosions. • The use of water and/or chemical fire suppressants could result in contaminated run-off. • An imminent danger of explosion exists.
Spill or Release of Hazardous Materials	• The spill could result in the release of flammable liquids or vapors, thus causing a fire or gas explosion hazard. • The spill could cause the release of toxic liquids or fumes in sufficient quantities or in a manner that is hazardous to or could endanger human health.
Spill or Release of High Temperature Liquid or Vapor	• The spill can be contained on site, but the potential exists for groundwater contamination. • The spill cannot be contained on site, resulting in off-site soil contamination and/or ground water or surface water pollution. • The spill quantity is greater than the reportable quantity limit for the material.
Natural Disaster	• A rainstorm exceeds the flash flood level. • The facility is in a projected tornado path or a tornado has damaged facility property. • Severe wind gusts are forecasted or have occurred and have caused damage to the facility.
Medical Emergency	• Overexposure to hazardous materials. • Trauma injuries (broken bones, severe lacerations/bleeding, burns). • Eye/skin contact with hazardous materials. • Loss of consciousness. • Heat stress (Heat stroke). • Heart attack. • Respiratory failure. • Allergic reaction.

The following measures will be taken to assure the availability of adequate equipment and manpower resources:

- Sufficient equipment and materials will be kept on site and dedicated for emergencies only. The inventory will be replenished after each use.
- On-site emergency responders will be current in regards to training and medical surveillance programs. Copies of all applicable certificates will be kept on file for on-site personnel required to respond.
- It will be the responsibility of the emergency coordinator to brief the on-site response team on anticipated hazards at the site. The emergency coordinator shall also be responsible for anticipating and requesting equipment that will be needed for response activities.
- Emergency response activities will be coordinated with the Local Emergency Management Agency (EMA) in compliance with SARA Title III requirements.

Communications will be established prior to commencement of any activities at the remediation site. Communication will be established so that all responders on site have availability to all pertinent information to allow them to conduct their activities in a safe and healthful manner. The primary communication device will be two-way radios. Air horns may be used to alert personnel of emergency conditions. A telephone will be located at the command post to summon assistance in an emergency.

Primary communication with local responders in the event of an emergency will be accomplished using commercial telephone lines.

9.2 EMERGENCY RECOGNITION AND PREVENTION

Because unrecognized hazards may result in emergency incidents, it will be the responsibility of the Site Manager and the Site Health & Safety Supervisor, through daily site inspections and employee feedback (Safety Observation Program, daily safety meetings, and Activity Hazard Analyses) to recognize and identify all hazards that are found at the site. These may include:

Chemical Hazards	• Materials at the site • Materials brought to the site
Physical Hazards	• Fire/explosion • Slip/trip/fall • Electrocution • Confined space • IDLH atmospheres • Excessive noise
Mechanical Hazards	• Heavy equipment • Stored energy system • Pinch points • Electrical equipment • Vehicle traffic
Environmental Hazards	• Electrical Storms • High Winds • Heavy Rain/Snow • Temperature Extremes (Heat/Cold Stress) • Poisonous Plants/Animals

Once a hazard has been recognized, the SS and the SHSS will take immediate action to prevent the hazard from becoming an emergency. This may be accomplished by the following:

- Daily safety meeting
- Task-specific training prior to commencement of activity
- Personal Protective Equipment (PPE) selection/use
- Written and approved permits for hot work, confined space
- Trenching/shoring procedure
- Air monitoring
- Following all EEI standard operating procedures
- Practice drills for fire, medical emergency, and hazardous substances spills

TABLE 9.1
EMERGENCY TELEPHONE NUMBERS

Local Agencies –	
Ambulance	911 or (910) 451-3855
Fire	911
Police	911 or (910) 455-9119
Hospital –	
Onslow County Memorial Hospital (off base)	(910) 577-2240 (off-base)
USMC Base Hospital (on base)	(910) 450-4840 (on base)
Regional Poison Control Center	800-672-1697
State Agencies State Highway Patrol	800-441-6127
Federal Agencies Agency for Toxic Substances and Disease Registry EPA Region Branch Response Center National Response Center	(404) 639-0615 (24 hr.) (404) 347-3931 (800) 424-8802
ROICC - Brent Rowse	(910) 451-2581 (office)
EEI Personnel Project Manager – Bill Morris Site Supervisor - Jeff Winkler Site Health and Safety Supervisor – Bill Morris Health and Safety Coordinator – Jim Madson Health & Safety Manger – Dewitt Davis, C.I.H.	 (910) 989-3214 (office) (888) 518-7738 (pager) (910) 389-4345 (cellular) (757) 536-0157 (cellular) (910) 451-2390 (site phone) (770) 663-1428 (office) (757) 495-3524 (office) (757) 434-0187 (cellular)
(24 hour)	800-537-9540
Additional Phone #'s in Section 3 this HASP	

9.3 PERSONNEL ROLES, LINES OF AUTHORITY, AND COMMUNICATIONS

This section of the ERCP describes the various roles, responsibilities, and communication procedures that will be followed by personnel involved in emergency responds.

The primary emergency coordinator for this site is the Site Supervisor. In the event an emergency occurs and the emergency coordinator is not on site, the SS or the highest-ranking employee on site will serve as the emergency coordinator until he arrives. The emergency coordinator will determine the nature of the emergency and take appropriate action as defined by this ERCP.

The emergency coordinator will implement the ERCP immediately as required. The decision to implement the plan will depend upon whether the actual incident threatens human health or the environment. Immediately after being notified of an emergency incident, the emergency coordinator or his designee will evaluate the situation to determine the appropriate action.

9.3.1 Responsibilities and Duties

This section describes the responsibilities and duties assigned to the emergency coordinator.

It is recognized that the structure of the "Incident Command System" will change as additional response organizations are added. EEI will follow procedures as directed by the fire department, LEPC, State and Federal Agencies as required. EEI will defer to the local Fire Department chief to assume the role of incident Commander upon arriving on site. Additional on-site personnel may be added to the Site Emergency Response Team as required to respond effectively.

9.3.2 On-Site Emergency Coordinator Duties

The on-site emergency coordinator is responsible for implementing and directing the emergency procedures. All emergency personnel and their communications will be coordinated through the emergency coordinator. Specific duties are as follows:

- Identify the source and character of the incident, type and quantity of any release. Assess possible hazards to human health or the environment that may result directly from the problem or its control.

- Discontinue operations in the vicinity of the incident if necessary to ensure that fires, explosions, or spills do not recur or spread to other parts of the site. While operations are dormant, monitor for leaks, pressure build-up, gas generation, or ruptures in valves, pipes, or other equipment, where appropriate.

- Notify local Emergency Response Teams if their help is necessary to control the incident. Table 9.1 provides telephone numbers for emergency assistance.

- Direct on-site personnel to control the incident until, if necessary, outside help arrives.

- Ensure that the building or area where the incident occurred and the surrounding area are evacuated and shut off possible ignition sources, if appropriate. The Emergency Response Team is responsible for directing site personnel such that they avoid the area of the incident and leave emergency control procedures unobstructed.

- If fire or explosion is involved, notify facility Fire Department.

- Notify ROICC

- Notify EEI Project Manager

- Have protected personnel, in appropriate PPE, on standby for rescue.

If the incident may threaten human health or the environment outside of the site, the emergency coordinator should immediately determine whether evacuation of area outside of the site may be necessary and, if so, notify the Police Department and the Office of Emergency Management. When required, notify the National Response Center. The following information should be provided to the

National Response Center:

- Name and telephone number
- Name and address of facility
- Time and type of incident
- Name and quantity of materials involved, if known
- Extent of injuries
- Possible hazards to human health or the environment outside of the facility

The emergency telephone number for the National Response Center is 800-424-8802. If hazardous waste has been released or produced through control of the incident, ensure that:

- Waste is collected and contained.
- Containers of waste are removed or isolated from the immediate site of the emergency.
- Treatment or storage of the recovered waste, contaminated soil or surface water, or any other material that results from the incident or its control is provided.
- Ensure that no waste that is incompatible with released material is treated or stored in the facility until cleanup procedures are completed.
- Ensure that all emergency equipment used is decontaminated, recharged, and fit for its intended use before operations are resumed.

9.4 SAFE DISTANCES AND PLACES OF REFUGE

The emergency coordinator for all activities will be the SS. No single recommendation can be made for evacuation or safe distances because of the wide variety of emergencies that could occur. Safe distances can only be determined at the time of an emergency based on a combination of site and incident-specific criteria. However, the following measures are established to serve as general guidelines.

In the event of minor hazardous materials releases (small spills of low toxicity), workers in the affected area will report initially to the contamination reduction zone. Small spills or leaks (generally less than 55 gallons) will require initial evacuation of at least 50 feet in all directions to allow for cleanup and to prevent exposure. After initial assessment of the extent of the release and potential hazards, the emergency coordinator or his designee will determine the specific boundaries for evacuation. Appropriate steps such as caution tape, rope, traffic cones, barricades, or personal monitors will be used to secure the boundaries.

In the event of a major hazardous material release (large spills of high toxicity/greater than 55 gallons), workers will be evacuated from the building/site. Workers will assemble at the entrance to the site for a head count by their foremen and to await further instruction.

If an incident may threaten the health or safety of the surrounding community, the public will be informed and, if necessary, evacuated from the area. The emergency coordinator, or his designee will inform the proper agencies in the event that this is necessary. Telephone numbers are listed in Table 9.1.

Places of refuge will be established prior to the commencement of activities. These areas must be identified for the following incidents:

- Chemical release
- Fire/explosion
- Power loss
- Medical emergency
- Hazardous weather

In general, evacuation will be made to the crew trailers, unless the emergency coordinator determines otherwise. It is the responsibility of the emergency coordinator to determine when it is necessary to evacuate personnel to off-site locations. In the event of an emergency evacuation, all the employees will gather at the entrance to the site until a head count establishes that all are present and accounted for. No one is to leave the site without notifying the emergency coordinator.

9.5 EVACUATION ROUTES AND PROCEDURES

All emergencies require prompt and deliberate action. In the event of an emergency, it will be necessary to follow an established set of procedures. Such established procedures will be followed as closely as possible. However, in specific emergency situations, the emergency coordinator may deviate from the procedures to provide a more effective plan for bringing the situation under control. The emergency coordinator is responsible for determining which situations require site evacuation.

9.5.1 Evacuation Signals and Routes

Two-way radio communication and an air horn will be used to notify employees of the necessity to evacuate an area or building involved in a release/spill of a hazardous material. Each crew supervisor will have a two-way radio. A base station will be installed in the EEI office trailer to monitor for emergencies. Only the emergency coordinator will initiate total site evacuation, however, in his absence, decision to preserve the health and safety of employees will take precedence. Evacuation routes will be posted in each outside work area. Signs inside buildings will be posted on walls or other structural element of a building. Periodic drills will be conducted to familiarize each employee with the proper routes and procedures.

9.5.2 Evacuation Procedures

In the event evacuation is necessary, the following actions will be taken:

- The emergency signal will be activated.
- No further entry of visitors, contractors, or trucks will be permitted. Vehicle traffic within the site will cease in order to allow safe exit of personnel and movement of emergency equipment.
- Shut off all machinery if safe to do so.
- ALL on-site personnel, visitors, and contractors in the support zone will assemble at the entrance to the site for a head count and await further instruction from the emergency coordinator.
- ALL persons in the exclusion zone and contamination reduction zone will be accounted for by their immediate crew leaders (e.g., foreman). Leaders will determine the safest exits for employees and will also choose an alternate exit if the first choice is inaccessible.

- During exit, the crew leader should try to keep the group together. Immediately upon exit, the crew leader will account for all employees in his crew.

- Upon completion of the head count, the crew leader will provide the information to the emergency coordinator.

- Contract personnel and visitors will also be accounted for.

- The names of emergency response team members involved will be reported to the emergency spill control coordinator.

- The emergency coordinator or designee will make a final tally of persons. No attempt to find persons not accounted for will involve endangering lives of EEI or other employees by re-entry into emergency areas.

In all questions of accountability, immediate crew leaders will be held responsible for those persons reporting to them. Visitors will be the responsibility of those employees they are seeing. Contractors and truck drivers are the responsibility of the Site Manager. The security guard will aid in accounting for visitors, contractors, and truckers by reference to sign-in sheets available from the guard shack.

- Personnel will be assigned by the emergency coordinator to be available at the main gate to direct and brief emergency responders.

- Re-entry into the site will be made only after the emergency coordinator gives clearance. At his direction, a signal or other notification will be given for re-entry into the facility.

- Drills will be held periodically to practice all of these procedures and will be treated with the same seriousness as an actual emergency.

9.6 EMERGENCY SPILL RESPONSE PROCEDURES AND EQUIPMENT

In the event of an emergency involving a hazardous material spill or release, the following general procedures will be used for rapid and safe response and control of the situation. Emergency contacts found in Table 9.1 provide a quick reference guide to follow in the event of a major spill.

9.6.1 Notification Procedures

If an employee discovers a chemical spill or process upset resulting in a vapor or material release, he or she will immediately notify the on-site emergency coordinator.

On-site Emergency Coordinator will obtain information pertaining to the following:

- The material spilled or released.
- Location of the release or spillage of hazardous material.
- An estimate of quantity released and the rate at which it is being released.
- The direction in which the spill, vapor or smoke release is heading.
- Any injuries involved.
- Fire and/or explosion or possibility of these events.
- The area and materials involved and the intensity of the fire or explosion.

This information will help the on-site emergency coordinator to assess the magnitude and potential seriousness of the spill or release.

9.6.2 Procedure for Containing/Collecting Spills

The initial response to any spill or discharge will be to protect human health and safety, and then the environment. Identification, containment, treatment, and disposal assessment will be the secondary response.

If for some reason a chemical spill is not contained within a dike or sump area, an area of isolation will be established around the spill. The size of the area will generally depend on the size of the spill and the materials involved. If the spill is large (greater than 55 gallons) and involves a tank or a pipeline rupture, an initial isolation of at least 100 ft. in all directions will be used. Small spills (less than or equal to 55 gallons) or leaks from a tank or pipe will require evacuation of at least 50 ft. in all directions to allow cleanup and repair and to prevent exposure. When any spill occurs, only those persons involved in overseeing or performing emergency operations will be allowed within the designated hazard area. If possible the area will be roped or otherwise blocked off.

If the spill results in the formation of a toxic vapor cloud (by reaction with surrounding materials or by outbreak of fire) and its release (due to high vapor pressures under ambient conditions), further evacuation will be enforced. In general an area at least 500 feet wide and 1,000 feet long will be evacuated downwind if volatile materials are spilled. (Consult the DOT Emergency Response Guide for isolation distances for listed hazardous materials.)

If an incident may threaten the health or safety of the surrounding community, the public will be informed and possibly evacuated from the area. The on-site emergency coordinator will inform the proper agencies in the event this is necessary. (Refer to Table 9.1)

As called for in regulations developed under the Comprehensive Environmental Response Compensation Liability Act of 1980 (Superfund), EEI practice is to report a spill of a pound or more of any hazardous material for which a reportable quantity has not been established and which is listed under the Solid Waste Disposal Act, Clean Air Act, Clean Water Act, or TSCA. EEI also follows the same practice for any substances not listed in the Acts noted above but which can be classified as a hazardous waste under RCRA.

Clean up personnel will take the following measures:

- Make sure all unnecessary persons are removed from the hazard area
- Put on protective clothing and equipment.
- If a flammable material is involved, remove all ignition sources, and use spark and explosion proof equipment for recovery of material.
- Remove all surrounding materials that could be especially reactive with materials in the waste. Determine the major components in the waste at the time of the spill.
- If wastes reach a storm sewer, try to dam the outfall by using sand, earth, sandbags, etc. If this is done, pump this material out into a temporary holding tank or drums as soon as possible.

- Place all small quantities of recovered liquid wastes (55 gallons or less) and contaminated soil into drums for incineration or removal to an approved disposal site.

- Spray the spill area with foam, if available, if volatile emissions may occur.

- Apply appropriate spill control media (e.g. clay, sand, lime, etc.) to absorb discharged liquids.

- For large spills, establish diking around leading edge of spill using booms, sand, clay or other appropriate material. If possible, use diaphragm pump to transfer discharged liquid to drums or holding tank.

9.6.3 Emergency Response Equipment

The following equipment will be staged in the support zone and throughout the site, as needed, to provide for safety and first aid during emergency responses. (Emergency eyewash equipment meets ANSI Standard;

- ABC-type fire extinguisher
- First-aid kit, industrial size
- Eyewash/safety shower
- Emergency signal horn

In addition to the equipment listed above, EEI maintains direct reading instrumentation that may be used in emergency situations to assess the degree of environmental hazard. This equipment will only be used by the Site Health & Safety Supervisor or other specially trained personnel. This equipment will be stored, charged and ready for immediate use in evaluating hazardous chemical concentrations. The equipment will be located at the EEI office trailer.

EQUIPMENT NAME	APPLICATION
FID/PID	Measures volatile organic compounds
LEL/02	Measures for potential flammable and oxygen (enriched/deficient) atmospheres

9.6.4 Emergency Spill Response Clean-Up Materials and Equipment

A sufficient supply of appropriate emergency response clean-up and personal protective equipment will be inventoried and inspected, visually, on a weekly basis.

The materials listed below may be kept on site for spill control, depending on the types of hazardous materials present on site. The majority of this material will be located in the support zone, in a supply trailer or storage area. Small amounts will be placed on pallets and located in the active work areas.

- Appropriate solvents, e.g., CITRKLEEN, for decontamination of structures or equipment.
- Sand or clay to solidify/absorb liquid spills.

The following equipment will be kept on site and dedicated for spill cleanup:

- Plastic shovels for recovering corrosive and flammable materials.

- Sausage-shaped absorbent booms for diking liquid spills, drains, or sewers.
- Sorbent sheets (diapers) for absorbing liquid spills.
- Over pack drums for containerizing leaking drums.
- 55-gallon open-top drums for containerization of waste materials.

*NOTE: All contaminated soils, absorbent materials, solvents and other materials resulting from the clean-up of spilled or discharged substances shall be properly stored, labeled, and disposed of off-site.

9.7 EMERGENCY CONTINGENCY PLAN

This section of the ERCP details the contingency measures EEI will take to prepare for and respond to fires, explosions, spills and releases of hazardous materials, hazardous weather, and medical emergencies.

9.8 MEDICAL EMERGENCY CONTINGENCY MEASURES

The procedures listed below will be used to respond to medical emergencies. The SHSS will contact the local hospital and inform them of the site hazards and potential emergency situations. A minimum of two First-Aid/CPR trained personnel will be maintained on site.

9.8.1 Response

The nearest workers will immediately assist a person who shows signs of medical distress or who is involved in an accident. The work crew supervisor will be summoned.

The work crew supervisor will immediately make radio contact with the on-site emergency coordinator to alert him of a medical emergency situation. The supervisor will advise the following information:

- Location of the victim at the work site
- Nature of the emergency
- Whether the victim is conscious
- Specific conditions contributing to the emergency, if known

The Emergency Coordinator will notify the SHSS. The following actions will then be taken depending on the severity of the incident:

Life- Threatening Incident
If an apparent life-threatening condition exists, the crew supervisor will inform the emergency coordinator by radio, and the local Emergency Response Services (EMS) will be immediately called. An on-site person will be appointed who will meet the EMS and have him her quickly taken to the victim. Any injury within the EZ will be evacuated by EEI personnel to a clean area for treatment by (EMS) personnel. No one will be able to enter the EZ without showing proof of training, medical surveillance and site orientation.

Non Life-Threatening Incident
If it is determined that no threat to life is present, the senior officer present will direct the injured person through decontamination procedures appropriate to the nature of the illness or accident. Appropriate first aid or medical attention will then be administered.

*NOTE: The area surrounding an accident site must not be disturbed until the scene has been Cleared by the senior officer present.

Any personnel requiring emergency medical attention will be evacuated from exclusion and contamination reduction zones if doing so would not endanger the life of the injured person or otherwise aggravate the injury. Personnel will not enter the area to attempt a rescue if their own lives would be threatened. The decision whether or not to decontaminate a victim prior to evacuation is based on the type and severity of the illness or injury and the nature of the contaminant. For some emergency victims, immediate decontamination may be an essential part of life-saving first aid. For others, decontamination may aggravate the injury or delay life-saving first aid. Decontamination will be performed if it does not interfere with essential treatment.

If decontamination can be performed, observe the following procedures:

- Wash external clothing and cut it away.
- If decontamination cannot be performed, observe the following procedures.
- Wrap the victim in blankets or plastic to reduce contamination of other personnel.
- Alert emergency and off-site medical personnel to potential contamination, instruct them about specific decontamination procedures.
- Send site personnel familiar with the incident and chemical safety information, e.g. MSDS, with the affected person.

All injuries, no matter how small, will be reported to the SS and SHSS. An accident/injury/illness report will be completely and properly filled out and submitted to the Health and Safety Manager, in accordance with EEI reporting procedures.

A list of emergency telephone numbers is given in Table 9.1.

9.8.2 Notification

The following personnel/agencies will be notified in the event of a medical emergency:

- Local Fire Department or EMS
- On-site Emergency Coordinator
- Workers in the affected areas
- ROICC

9.9 FIRE CONTINGENCY MEASURES

EEI personnel and subcontractors are not trained professional firefighters. Therefore, if there is any doubt that a fire can be quickly contained and extinguished, personnel will notify the emergency coordinator by radio and vacate the structure or area. The emergency coordinator will immediately notify the local Fire Department.

The following procedures will be used to prevent the possibility of fires and resulting injuries:

- Sources of ignition will be kept away from where flammable materials are handled or stored.
- The air will be monitored for explosives before and during hot work and periodically where flammable materials are present. Hot work permits will be required for all such work.
- "No smoking" signs will be conspicuously posted in areas where flammable materials are present.
- Fire extinguishers will be placed in all areas where a fire hazard may exist.
- Before workers begin operations in an area the foreman will give instruction on egress procedures and assembly points. Egress routes will be posted in work areas and exit points clearly marked.

9.9.1 Response

The following procedures will be used in the event of a fire:

- Anyone who sees a fire will notify his or her supervisor who will then contact the Emergency Coordinator by radio. The emergency coordinator will activate the emergency air horns and contact the local Fire Department.
- When the emergency siren sounds, workers will disconnect electrical equipment in use (if possible) and proceed to the nearest fire exit.
- Work crews will be compromised of pairs of workers (buddy system) who join each other immediately after hearing the fire alarm and remain together throughout the emergency. Workers will assemble at a predetermined rally point for a head count.
- When a worker has extinguished a small fire, the emergency coordinator will be notified.

9.10 HAZARDOUS WEATHER CONTINGENCY MEASURES

Operations will not be started or continued when the following hazardous weather conditions are present:

- Lightning
- Rains
- High Winds

9.10.1 Response

Excavation/soil stockpiles will be covered with plastic liner. All equipment will be shut down and secured to prevent damage. Personnel will be moved to safe refuge, initially crew trailers. The emergency coordinator will determine when it is necessary to evacuate personnel to off-site locations and will coordinate efforts with fire, police and other agencies.

9.10.2 Notification

The emergency coordinator will be responsible for assessing hazardous weather conditions and notifying personnel of specific contingency measures. Notification will include:

- EEI employees and subcontractors
- ROICC
- Local Emergency Management Agency

9.11 SPILL/RELEASE CONTINGENCY MEASURES

In the event of release or spill of a hazardous material the following measures will be taken:

9.11.1 Response

Any person observing a spill or release will act to remove and/or protect injured/contaminated persons from any life-threatening situation. First aid and/or decontamination procedures will be implemented as appropriate.

First aid will be administered to injured/contaminated personnel. Unsuspecting persons/vehicles will be warned of the hazard. All personnel will act to prevent any unsuspecting persons from coming in contact with spilled materials by alerting other nearby persons. Attempt to stop the spill at the source, if possible. Without taking unnecessary risks, personnel will attempt to stop the spill at the source. This may involve activities such as uprighting a drum, closing a valve or temporarily sealing a hole with a plug.

Utilizing radio communications, the emergency coordinator will be notified of the spill/release, including information on material spilled, quantity, personnel injuries and immediate life threatening hazards. Air monitoring will be implemented by the emergency coordinators and SHSS to determine the potential impact on the surrounding community. Notification procedures will be followed to inform on-site personnel and off-site agencies. The emergency coordinator will make a rapid assessment of the spill/release and direct confinement, containment and control measures. Depending upon the nature of the spill, measures may include:

- Construction of a temporary containment bern utilizing on-site clay absorbent earth
- Digging a sump, installing a polyethylene liner and
- Diverting the spill material into the sump placing drums under the leak to collect the spilling material before it flows over the ground
- Transferring the material from its original container to another container

The emergency coordinator will notify the ROICC of the spill and steps taken to institute clean up. Emergency response personnel will clean up all spills following the spill clean-up plan developed by the emergency coordinator. Supplies necessary to clean up a spill will be immediately available onsite. Such items may include, but are not limited to:

- Shovel, rake
- Clay absorbent
- Polyethylene liner
- Personal safety equipment
- Steel drums
- Pumps and miscellaneous hand tools

The major supply of material and equipment will be located in the Support Zone. Smaller supplies will kept at active work locations. The emergency coordinator will inspect the spill site to determine that the spill has been cleaned up to the satisfaction of the ROICC. If necessary, soil, water or air samples may be taken and analyzed to demonstrate the effectiveness of the spill clean-up effort. The emergency coordinator will determine the cause of the spill and determine remedial steps to ensure that recurrence is prevented. The emergency coordinator will review the cause with the ROICC and obtain his concurrence with the remedial action plan.

10.0 TRAINING REQUIREMENTS

As a requirement for work at this site, in any hazardous waste work area, all field personnel will be required to take a 40-hour training class. This training must cover the requirements in 29 CFR 1910.120 and 29 CFR 1926.65: personal protective equipment, toxicological effects of various chemicals, hazard communication, blood borne pathogens, handling of unknown tanks and drums, confined-space entry procedures, electrical safety, etc. In addition, all personnel must receive annual 8-hour refresher training and three-day on-site training under a trained, experienced supervisor. Supervisory personnel shall have received additional 8-hour training in handling hazardous waste operations.

All personnel entering the exclusion zone will be trained in the provisions of this site safety plan and be required to sign the Site Safety Plan Acknowledgment.

Outlines of the orientation for EEI / sub-contract personnel and visitors are presented below:

EEI/SUBCONTRACTORS	VISITOR ORIENTATION
• HASP sign off • Sign in/out procedures • Site background • Chain of command • Rules and regulations • Hours of work • Absences • Equipment • Emergency Information • Emergency signal • Gathering point • Responsibilities/roles • Emergency phone numbers • Work Zones • Contaminants and Material Safety Data Sheets (MSDS) [Hazard Communication Program]	• Sign in/out procedures • Review of Site map • Work Zones in progress • Hazard Communication • Emergency plan/signals • Training/medical requirements • Zones/areas open to visitors

11.0 MEDICAL SURVEILLANCE PROGRAM

All EEI personnel participate in a medical and health-monitoring program. This program is initiated when the employee starts work with a complete physical and medical history and is continued on a regular basis. A listing of EEI worker medical profile is developed. This program was developed in conjunction with a consultant toxicologist and EEI occupational health physician. Other medical consultants are retained when additional expertise is required.

The medical surveillance program meets the requirements of the OSHA Standard 29 CFR 1910.120/1926.65(f).

No specific tests are expected for this project.

The following information is provided in the event that medical attention is necessary.

The EEI Medical Director is:

Dr. Elayne Theriault
Continuum Health Care
800-229-3674 (office)

Newport Family Practice
338 Howard Boulevard
Newport, NC
(252)223-5054

The EEI Medical Director and the Health & Safety Manager will be immediately notificd of any suspected exposures to hazardous materials/wastes.

APPENDIX A

SAFETY PLAN ACKNOWLEDGEMENT

All site personnel indicated below have reviewed and are familiar with the Master Site HASP and this HASP Addendum for the site described within the site-specific work plan.

(Name - Print)	(Company)
(Name - Sign)	(Date/Time)
(Name - Print)	(Company)
(Name - Sign)	(Date/Time)
(Name - Print)	(Company)
(Name - Sign)	(Date/Time)
(Name - Print)	(Company)
(Name - Sign)	(Date/Time)

(Name - Print)	(Company)
(Name - Sign)	(Date/Time)
(Name - Print)	(Company)
(Name - Sign)	(Date/Time)

* This page is to be reproduced to accommodate the numbers of personnel who receive training prior to performing activities.

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APPENDIX B

ACCIDENT PREVENTION PLAN
FOR
LONG TERM MONITORING AND OPERATION & MAINTENANCE
AT
MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA

Prepared for:

DEPARTMENT OF THE NAVY
Contract No. N62470-03-D-4000

Atlantic Division
Naval Facilities Engineering Command
6506 Hampton Boulevard
Building A (South East Wing) 3rd Floor
Norfolk, Virginia 23508

Prepared by:

Engineering and Environment, Inc.
195 South Rosemont Road, Suite 118
Virginia Beach, Virginia 23452

Contract Task Order 0010

November 2003

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ATTACHMENTS

1.0 Purpose and Objectives

Engineering & Environment (EEI) has been tasked by the Naval Facilities Engineering Command (NAVFACENGCOM) in support of Environmental Remediation Services under the cognizance of the Atlantic Division (LANTDIV) for Marine Corp Base, Camp LeJeune (CLJ), North Carolina. This document presents the Accident Prevention Plan to be implemented in relation to the Long Term Monitoring and Operation and Maintenance of remediation projects at MCB Camp Lejeune, North Carolina under Contract No. N26470-03-D-4000, CTO 0010. This plan covers both on and off-site activities.

2.0 Plan Preparation

Plan Preparer

This Plan was prepared by:
Mr. Martin M. Schlesinger, P.E.
Program Manager

Plan Approval

This Plan approved by:
Dr. S. Kumar, P.E.
President, Engineering & Environment, Inc.

Plan Concurrence by
Mr. DeWitt Davis IV, C.I.H., C.S.P
Health and Safety Manager

3.0 Background Information

Engineering and Environment, Inc. (EEI) is an environmental services firm of over 100 experienced professional and technical associates, providing services to clients throughout the United States. Since its founding, EEI has established itself as a provider of quality environmental services to Federal, State and local governments, as well as the private sector. EEI provides a wide range of environmental and planning services, including compliance monitoring/sampling, Phase I and II Environmental Site Assessments, restoration and pollution prevention activities and NEPA documentation. EEI has experience in the areas of remediation,

operation & maintenance, hazardous waste management, ISO 14001 environmental management system development and implementation and construction management.

Corporate QC Manager appointment letter is provided in Attachment A.

EEI Accident Experience: No significant recordable or reportable injuries or illnesses.

Phases of Work and Hazardous Activities for which Activity Hazard Analyses are required are included in Attachment B.

These activities are:

Site Preparation
Fall Protection (at Treatment Facilities)
Trenching and Installation of SVE and AS Pipe
Soil Boring/Soil Sampling, Well installation
Vacuum Truck Operation
Well Sampling
Truck and Equipment Loading
Equipment Decontamination
Site Restoration

4.0 Statement of Safety and Health Policy

At EEI, we constantly strive to provide timely, cost-effective, permanent solutions to environmental concerns, and minimizing risks to human health and the environment. EEI has published a Corporate Health & Safety Plan. A copy is maintained at the headquarters.

The policy of Engineering & Environment, Inc. is to provide a safe and healthful work environment for all employees. EEI considers no phase of operations or administration to be of greater importance than injury and illness prevention. Safety takes precedence over expediency and shortcuts. Managers and supervisors will undertake accident prevention and take such advance steps as to eliminate mishaps. At EEI, it is believed all accidents and injuries are preventable. EEI will take every reasonable step to reduce the possibility of injury, illness, or accident.

5.0 Responsibilities and Lines of Authority

The Project Manager (PM) has the overall responsibility for the project and to assure that the requirements of the contract are attained in a manner consistent with the HASP requirements. The PM will coordinate with the Site Supervisor (SS) and the Site Health & Safety Supervisor (SHSS) to assure that the work is completed in a manner consistent with the HASP. The SS is responsible for field implementation of the HASP. The SS will be the main contact in any on-

site emergency situation and will insure off-site emergency agencies have been contacted prior to the start of work. The PM and SHSS are authorized to administer this HASP. The PM and SHSS are authorized to stop work when an imminent health or safety risk exists. The PM is responsible for

reviewing the HASP and ensuring that the HASP is complete and accurate. The PM also provides technical and administrative support for the Health and Safety Program and will be available for consultation when required. Each employee is responsible for personal safety as well as the safety of others in the work area. The following assignments are made:

Program Manager:	Martin M. Schlesinger, P.E.
Project Manager:	Bill Morris, P.G.
Corporate H&S Officer:	DeWitt Davis, C.I.H./C.S.P.
Corporate QC Manager:	Aneil Kumar
Site H&S Supervisor:	Bill Morris, P.G.
Site H&S Manager:	DeWitt Davis, C.I.H./C.S.P.

5.1 Emergency Response Plan

Employees will utilize the buddy system and supervisors will check frequently on workers in remote locations.

Evacuation plans will be selected and workers briefed at the start of work on any new site.

Contractors performing work on MCB Camp Lejeune for this project include:

Shaw Environment and Infrastructure, Inc.
5700 Thurston Avenue, Suite 116
Virginia Beach, Virginia 23455

Fire and Medical Emergencies Call 911.

Stay on the line and have someone standby to direct the responding unit to the site.

The nearest hospital is Onslow Memorial Hospital on 317 Western Boulevard. Coming off the base take a right on Western. The hospital is west of the base near the Jacksonville Mall. The general phone number is: 910-577-2345. Please Note: There is a base hospital if necessary.

Emergency Room 910-577-2240

Permits for Confined Space Entry (Tanks) must be procured in advance from both the Base Fire Department and the Base Safety Officer. The Base Fire Department must be notified when entries are being made.

The Fire Prevention Officer is Chief Robert Nichols	910-451-3320
Non-Emergency Base Fire Department	910-452-3004,5
Base Safety Officer Jack Erdman	910-451-7450

6.0 Subcontractors and Suppliers

Primary Subcontractor:

Shaw Environment and Infrastructure, Inc.
5700 Thurston Avenue, Suite 116
Virginia Beach, Virginia 23455

Drilling Services Subcontractor:

Parratt Wolff, Inc.
P.O. Box 1029, 501 Millstone Drive
Hillsborough, North Carolina 27278

Laboratory Services Subcontractor:

To be Selected from Approved List

Subcontractors are required to observe safety and health procedures. On site sub-contractors will provide EEI their safety plans and programs. The PM and SS will brief the sub-contractors on safety issues weekly.

7.0 Training

Training is regarded as a major accident prevention activity. Personnel will receive training in accordance with EEI's written H&S training program and 29 CFR 1910 Section .120, 29 CFR 1926 Section .65, and 29 CFR 1926 Section .21. The Corporate Health and Safety Program will include a section describing training requirements.

Personnel entering areas where hazardous materials/waste may be present will have successfully completed 40 hours of hazardous waste instruction off the site; 3 days actual field experience under the direct supervision of a trained, experienced supervisor; and 8 hours refresher training annually. Onsite supervisors will have completed the above training and 8 hours of additional, specialized training covering at least the following topics: EEI's Health and Safety Plan (HASP), Personal Protective Equipment Program, Spill Containment program, and Health Hazard Monitoring procedures and techniques. Copies of current training certification statements will be submitted prior to initial entry onto the work site.

Prior to commencement of onsite field activities, all site employees, including those assigned only to the Support Zone, will attend a site-specific H&S training session of at least 1-hour duration. The Corporate Health and Safety Officer (CHSO) and the Site Health and Safety Supervisor (SHSS), to ensure that all personnel are familiar with requirements and responsibilities for maintaining a safe and healthful work environment, will conduct this session. Procedures and contents of the accepted Site Specific Health and Safety Plan (SSHASP) and Sections 01.B.02 and 28.D.03 of EM 385-1-1 will be thoroughly discussed. The Contracting Officer will be notified at least 1 day prior to the initial site-specific training session so

government personnel involved in the project may attend. Separate training topics appropriate to the site activity are incorporated during weekly safety briefings.

The Site Health and Safety Supervisor (SHSS) will conduct periodic training at least weekly for personnel assigned to work at the site during the following day. The training will address Health and Safety (H&S) procedures, work practices, any changes in the Site Specific Health and Safety Plan (SSHASP), activity hazard analyses, work tasks, or schedule; results of previous week's air monitoring, review of safety discrepancies and accidents. Should an operational change affecting onsite fieldwork be made, a meeting prior to implementation of the change will be convened to explain H&S procedures. Site-specific training sessions for new personnel, visitors, and suppliers will be conducted by the SHSS using the training curriculum outlines developed by the CHSO.

8.0 Safety & Health Inspections

EEI along with the sub-contractor will perform an on-site safety inspection during field activities. These activities and any follow-up actions necessary will ensure that the Health and Safety rules will be observed. All inspections will be made a matter of record in the EEI's Quality Control Daily Report.

9.0 Safety and Health Expectations, Incentive Programs and Compliance

Engineering and Environment, Inc. expects to accomplish the project without significant mishaps. Review of past workers' comp and mishap logs reveal no significant recordable injuries or illnesses. Most of the heavy work is done through contractors. The Contractors are expected to follow EEI's Corporate Health and Safety Plan and develop accident prevention activities. The Base-wide Health and Safety Plan prescribes the procedures that must be followed during referenced site activities. Operational changes that could affect the health and safety of personnel, the community, or the environment will not be made without the prior approval of the Project Manager and the Health and Safety Manager. EEI managers and supervisors will review and observe implementation of the Contractors health and safety plans and performance.

The provisions of this plan are mandatory for all personnel and subcontractors assigned to the project. All visitors to the work site must abide by the requirements of the plan. Disregard for the Safety Policy and or procedure is basis for disciplinary action by EEI.

EEI programs for accident prevention are as follows:

Management Commitment and Employee Participation
Hazard communication and awareness training
Contract health and safety provisions for subcontractors
Project design and hazard assessments
Emergency Response Plans
Hazard Abatement and Corrective Action

Accident Investigation (Root Cause Analysis)
Personnel Selection and Medical Surveillance
Education and Training
Articulation of Specific Safety and Health Program such as Hazardous Communication (HAZCOM) Personal Protective Equipment, Respiratory Protection, Confined Space Entry, Fall Prevention, Heat and Cold Stress, Environmental Safety.

The specifics for these programs are covered in the Corporate Health and Safety Plan.

10.0 Accident Reporting and Investigation

Employees will report all incidents and injuries even those just requiring first aid treatment. Supervisor's will report and write initial incident and injury reports and notify the EEI PM and send initial report to EEI Human Resources. EEI will maintain the OSHA 300 log for on site workers. The Corporate Health and Safety Officer, the Site Health and Safety Officer or other appropriate management personnel investigate all work related accidents. Root causes will be mapped out and corrective action taken that is indicated. Any major accidents will immediately be reported to both Base personnel and EEI management.

11.0 Medical Support

EEI uses the following medical clinic that conducts physicals, medical surveillance, handles minor emergencies and injuries, provides consultation to remote worksite as required.

Nowcare Medical Clinic
4323D Indian River Road
Chesapeake Virginia 23325

(Moving in May to 6632 Indian River Road
Virginia Beach, VA 23464)

757-424-4300

12.0 Personal Protective Equipment

The Activity Hazard Analysis for this project will be prepared by Martin M. Schlesinger, P.E. or Bill Morris, PG, and approved by the CHSO/CSP/CIH. In accordance with 29 CFR 1910 Subpart I and 29 CFR 1926 Subpart E, EEI has conducted a hazard assessment in general for the Marine Corps Base, Camp Lejeune.

The basic personal protective equipment is a follows:

Hard Hat ANSI Z87.1
Safety Glasses ANSI Z89.1
Safety Boots or Shoes ANSI Z41.1
Work clothes/overalls (Level D)
Gloves
Hearing protection (muffs or plugs)(available for use)
Dust Masks P100 (available for use)

Other equipment may be prescribes after initial surveys are made. Personnel Protection Equipment will not be issued or utilized by EEI personnel or subcontractors until they have provided proof of their medical fitness to use such equipment.

13.0 Plans Required by Safety Manual

See BASE-WIDE HEALTH & SAFETY PLAN for Long Term Monitoring & Operation and Maintenance at MCB CAMP LEJEUNE for information regarding Plans, Programs and Procedures required by the COE Safety Manual EM 385-1-1

General descriptions of specific plans for Health and Safety are found in the Corporate Health and Safety Plan.

ATTACHMENT A

Corporate QC Manager

Effective immediately, Mr. Aneil Kumar is appointed as the Corporate Quality Control Manager for EEI. He is responsible for implementing the QC program as described in Contract N62470-03-D-4000. He has the Authority to direct the correction of non-conforming work related to the contract.

Dr. S. Kumar, P.E.
President,
Engineering & Environment, Inc.

ATTACHMENT B

Activity Hazard Analysis

Activity: Site Preparation

Description of Work, Principle Steps	Potential Safety Health Hazards	Recommended Controls
Cutting Grass Trimming trees, shrubs and bushes	Dismemberment, cuts , sloping surfaces (rollover), noise, eye, overhead, falls, electrocution, slips	Safety shoes, safety glasses, hearing protection, safety belts, lanyards, hard hats, be alert for overhead wires, do not exceed allowable slope for mower, Enforce safety rules, insure all equipment guards are in place
Equipment to be Used	**Inspection Requirements**	**Training Requirements**
Riding and push grass mowers Gas trimmers Chain saws	Inspect equipment before use	Familiar with manufacturers operation manual for that equipment

Site Supervisor_____Date:
Safety Officer_____Date:

Activity: Fall Protection (at Treatment Plants)

Description of Work, Principle Steps	Potential Safety Health Hazards	Recommended Controls
Accessing equipment located on elevated platforms of on the top of tanks	Falls from ladders and elevated man-ways	Enforce safety rules related to climbing ladders. Ensure all guards and ladder cages are in place.
Equipment to be Used	**Inspection Requirements**	**Training Requirements**
	Daily safety inspections of equipment	Review of safety rules.

Site Supervisor_____Date:
Safety Officer_____Date:

Activity: Trenching and installation of SVE and AS Pipe

Description of Work, Principle Steps	Potential Safety Health Hazards	Recommended Controls
Site preparation Trenching Installation or removal of piping Backfilling	Dismemberment, cuts, sloping surfaces (rollover), noise, eye, overhead, falls, electrocution, slips. Trenching equipment, moving vehicles Use of potentially toxic compounds to connect piping.	Safety shoes, safety glasses, hearing protection, safety belts, lanyards, hard hats, be alert for overhead wires. Enforce safety rules related to trenching and shoring, insure all equipment guards are in place. Proper training for pipe assembly.
Equipment to be Used	**Inspection Requirements**	**Training Requirements**
Backhoes, hand tools	Inspect equipment before use	Familiar with manufacturers operation manual for that equipment. Familiarity with trenching and shoring rules. Familiar with manufacturers recommended piping instructions.

Site Supervisor_____Date:
Safety Officer_____Date:

Activity: Soil Boring/Soil Sampling, Well Installation

Description of Work, Principle Steps	Potential Safety Health Hazards	Recommended Controls
Location and set-up of drilling Rig Drilling/Boring Well installation Installation of cap and riser	Moving vehicles, rotating equipment Overhead structures and power lines Rotating equipment Noise Contact with underground utilities	Safety Shoes, safety glasses, hearing protection, hard hats, be alert to the location of equipment, be alert for overhead structures and power lines, locate underground utilities, wheel chocks, respirators, gloves, barricades
Equipment to be Used	**Inspection Requirements**	**Training Requirements**
Drilling Rig, pumps, augers, split-spoon samplers, Fuel trucks	Daily safety inspections of equipment and location Notification of utilities	Proper operators certification

Site Supervisor_____Date:
Safety Officer_____Date:

Activity: Vacuum Truck Operations

Description of Work, Principle Steps	Potential Safety Health Hazards	Recommended Controls
Driving truck Pick-up material with vacuum Disposal of material	Moving vehicles Dismemberment, cuts , sloping surfaces (rollover), noise, eye, falls, slips Vacuum equipment Potentially hazardous materials Compatibility of materials in the	Safety shoes, safety glasses, hearing protection, safety belts, hard hats, Obey all traffic and registration regulations Enforce safety rules, insure all equipment guards are in place Keep hands and face away from vacuum nozzle. Proper maintenance of equipment

Equipment to be Used	Inspection Requirements	Training Requirements
Vacuum Truck with hose and nozzle	Inspect equipment before use	Familiar with manufacturers operation manual for that equipment

Site Supervisor_____Date:
Safety Officer_____Date:

Activity: Well Sampling

Description of Work, Principle Steps	Potential Safety Health Hazards	Recommended Controls
Open well cap Purge Sample Close well	Stinging insects Potentially toxic vapors Handling fixation chemicals Cuts and abrasions	Safety shoes, safety glasses, hearing protection, safety belts, hard hats, Chemical resistant gloves Insect spray

Equipment to be Used	Inspection Requirements	Training Requirements
Bailers, low flow pumps,	Daily safety inspections of equipment Inspection of wells before opening	Proper operators training Review of sampling procedures

Site Supervisor_____Date:
Safety Officer_____Date:

Activity: Truck and Equipment Loading

Description of Work, Principle Steps	Potential Safety Health Hazards	Recommended Controls
Identification of material to be loaded	Dismemberment, cuts, sloping surfaces (rollover), noise, eye, falls, slips, muscle strain.	Safety shoes, safety glasses hard hats, do not exceed capacity of truck, properly secure load; Enforce safety rules, insure all equipment guards are in place
Equipment to be Used	**Inspection Requirements**	**Training Requirements**
Ramps (if required)	Inspect equipment to be loaded and vehicle before use. Inspect ropes and equipment used to secure load	Familiar with manufacturer's operation manual for that equipment.

Site Supervisor_____Date:
Safety Officer_____Date:

Activity: Equipment Decontamination

Description of Work, Principle Steps	Potential Safety Health Hazards	Recommended Controls
Washing and or rinsing of sampling equipment	Contact with dangerous chemicals, slips,	Safety shoes, safety glasses, hearing protection, hard hats, Chemical resistant gloves, tyvec suits
Equipment to be Used	**Inspection Requirements**	**Training Requirements**
Hoses, Wash bottles, pressure washers	Inspections of equipment	Proper operators certification

Site Supervisor_____Date:
Safety Officer_____Date:

Activity: Site Restoration

Description of Work, Principle Steps	Potential Safety Health Hazards	Recommended Controls
Removal of wells and piping Grading Re-vegetation	Cuts, abrasions, eyes, falls, slips, Moving vehicles	Safety shoes, safety glasses, hearing protection, hard hats,
Equipment to be Used	**Inspection Requirements**	**Training Requirements**
Backhoes, graders Hydro-seeder	Daily safety inspections of equipment	Proper operator training

Site Supervisor_____Date:
Safety Officer_____Date:

ATTACHMENT C

Signature Sheet

President, Engineering & Environment, Inc.	Dr. S. Kumar (757)457-0002 (office)
Program Manager	Martin Schlesinger (757)457-0002 (office)
Project Manager	Bill Morris (910)989-3214 (office)
Site Health and Safety Supervisor	Bill Morris (910)989-3214 (office)