

5/1/91-01906

**SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
NAVAL SUPPLY CENTER
Cheatham Annex
Williamsburg, Virginia**

Prepared for:

Atlantic Division
Naval Facilities Engineering Command
Norfolk, Virginia
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APPROVALS

This plan has been prepared to provide site-specific safety and health information related to activities to be performed during field investigation activities at the Naval Supply Center, Cheatham Annex, Williamsburg, Virginia. Personnel associated with this project will sign the Declaration of Understanding to document that they have read and understand this Site-Specific Health and Safety Plan (HASP). Changes to this HASP shall be documented in writing. Any additional safety information developed during field activities shall be noted and used to revise the plan prior to subsequent activities. This plan has been reviewed and approved for this project.

Andrew M. Forrest
Project Manager

Date

Ronald G. Martin
Project Safety Manager

Date

Mark E. Skrobacz
Site Safety Officer

Date

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1.0 INTRODUCTION

WASTE TYPE(S):				
Liquid: <u> X </u>	Solid: <u> </u>	Sludge: <u> </u>	Gas: <u> </u>	Other: <u> </u>
CHARACTERISTICS:				
Corrosive: <u> </u>	Ignitable: <u> </u>	Radioactive: <u> </u>	Volatile: <u> X </u>	Toxic: <u> X </u>
Reactive: <u> </u>	Unknown: <u> </u>	Other: <u> </u>		

1.1 Plan Purpose

This Health and Safety Plan (HASP) describes the procedures that will be followed during field investigation activities at the Naval Supply Center, Cheatham Annex (CA), Williamsburg, Virginia. This HASP is designed to protect the health and safety of personnel involved in the investigation of hazardous substances at the site and to develop a contingency plan for dealing with onsite emergencies, some of which may have the potential for offsite impact. Topics addressed in the health and safety program described by this HASP include:

- Site characteristics
- Waste characteristics
- Hazard evaluation
- Site control
- Personnel training
- Personal protection
- Monitoring equipment
- Work limitations
- Action levels
- Decontamination
- Medical monitoring
- Emergency contacts

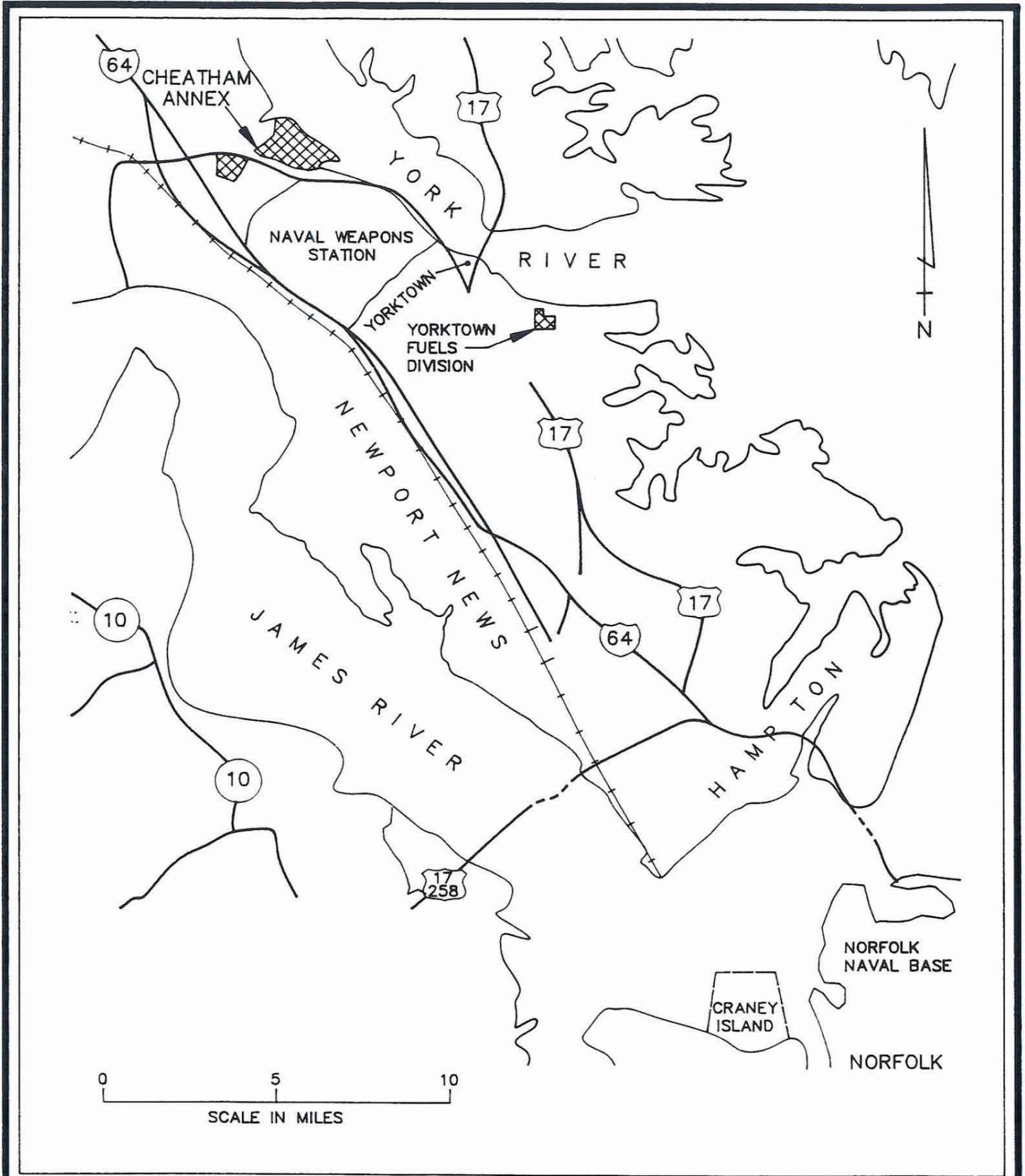
- Incident reporting
- Field documentation of health and safety procedures

1.2 Site Description

CA is located in Williamsburg, Virginia in Central York County on the Virginia Peninsula (Figure 1-1). The 1,579-acre facility is bounded on the north by the York River, on the south by the Colonial Parkway, on the west by Department of Interior property, and on the east by the Yorktown Naval Weapons Station. CA is surrounded by a patrolled fence with guards stationed at gates to restrict entry by unauthorized personnel.

CA was initially commissioned as a satellite unit of the Naval Supply Depot in June 1943 to provide bulk storage facilities. During World War I and prior to establishing CA, the site had been the location of a large powder and shell-loading facility operated by Dupont. Following closeout in 1918, the land was used for farming or left idle until CA was established in 1943. CA's mission has essentially remained the same since it was commissioned: receiving, storing, packaging, and shipping materials to Federal facilities on the east coast and major distribution centers in Europe.

CA is located on the York-James Peninsula (see Figure 1-1) in the Coastal Plain Physiographic Province. This elongated peninsula occupies an area of approximately 1,752 square miles with a topography characterized as gently rolling terrain dissected by ravines and stream valleys that flow predominantly northeast toward the York River. Ground elevations at the site vary from sea level along the eastern boundary at the York River to a maximum elevation of approximately 90 feet above mean sea level (msl) on a few scattered hills in western site portions.



 Environmental Science & Engineering	DATE 5-15-91	SCALE SHOWN	TITLE VICINITY MAP CHEATHAM ANNEX	
	DRAWN BY LAF	APPROVED BY		
	JOB NO. 4901165	DWG. NO. / REV. NO. VM65 / -	CLIENT NSC CHEATHAM	FIGURE 1-1

The climate of the Virginia Peninsula is moderate continental, with mild winters and long, warm summers. Average monthly temperatures for the area range from approximately 41°F in January to 79°F in July. Precipitation is well distributed throughout the year, and the heaviest rains occur in July and August. Prevailing winds are usually from the southwest, although northeasterly winds are common in some months. The average wind speed is 10.6 miles per hour (mph), and average annual net precipitation is approximately 45 inches.

2.0 ORGANIZATION AND RESPONSIBILITIES

Responsibilities of the Project Manager, Project Safety Manager, Site Safety Officer (SSO), Field Team Leader (FTL), and field team members will be in accordance with ESE standard practices. Subcontractors for this project are considered field team members and subject to the same requirements and responsibilities.

2.1 Project Manager

The ultimate responsibility for health and safety on the project lies with the Project Manager. The Project Manager for the field work to be conducted at CA is Mr. Andrew M. Forrest. The Project Manager's safety and health responsibilities include:

1. Directing the preparation of an effective and comprehensive HASP for the project
2. Ensuring that adequate and appropriate safety training and equipment are available for project personnel
3. Ensuring that project personnel are medically monitored and qualified for their involvement in the project

2.2 Project Safety Manager

The Project Safety Manager for the field work will be Mr. Ronald G. Martin, who will be responsible to the Project Manager for overall project safety. He will be responsible for implementing corrective actions for the safety program at CA, including:

1. Preparing or reviewing the project HASP, making necessary changes, and providing final approval when the document is satisfactory
2. Categorizing and identifying the hazards and associated risks for the conditions and activities to be encountered onsite
3. Reviewing reports of incidents related to project activities
4. Ensuring proper documentation and maintenance of all health and safety records

2.3 Site Safety Officer

The Site Safety Officer (SSO) will be Mr. Mark E. Skrobacz, who will be responsible to the Project Manager for personnel health and safety during site activities at CA.

Responsibilities include:

1. Conducting site safety meetings prior to field activities
2. Performing onsite documentation of all required records (e.g., medical surveillance, training, safety meetings)
3. Implementing all safety procedures and operations onsite
4. Updating equipment or procedures based on new information gathered during the site inspection
5. Upgrading or downgrading the levels of personal protection based on site observations
6. Determining and posting locations and routes to medical facilities (including poison control centers) and arranging emergency transportation to medical facilities, as required
7. Notifying, as required, local public emergency officers, including police and fire departments, of the nature of the team's operations and making emergency telephone numbers available to all team members
8. Ensuring that at least one member of the field team is available to stay behind and notify emergency services if the SSO must enter an area of maximum hazard, or entering this area only after notifying emergency services (police department)
9. Observing work party members for symptoms of onsite exposure or stress
10. Arranging for the availability of onsite emergency medical care and first aid, as necessary

The SSO has the ultimate responsibility to stop any operation that threatens the health or safety of the team or surrounding populace or causes significant adverse impact to the environment.

2.4 Field Team Leaders

The FTL will also be Mr. Skrobacz. He will be responsible for all operational activities onsite and all safety and health practices by site personnel. FTL responsibilities include:

1. Ensuring and enforcing compliance with the HASP
2. Controlling site entry of unauthorized personnel or coordinating with local law enforcement agencies or state authorities to limit site access
3. Coordinating site activities so they may be performed in an efficient and safe manner consistent with the HASP
4. Enforcing the buddy system onsite
5. Ensuring the ready access and availability of all safety equipment

2.5 Field Team Members

ESE field team members and subcontractors are responsible to the FTL and SSO for all activities onsite. The responsibilities of field team members include:

1. Complying with all aspects of the HASP, including strict adherence to the buddy system
2. Obeying the orders of the FTL and SSO
3. Notifying the FTL or SSO of hazardous or potentially hazardous incidents or working situations

2.6 Site Visitors

All visitors, including client and government agency representatives, are required to comply with all HASP provisions, and will be responsible to the FTL or SSO. Site visitors are responsible for:

1. Complying with all aspects of the HASP, including strict adherence to the buddy system
2. Obeying the orders of the FTL and SSO

2.7 Client Contact

The client contact will be Mrs. Brenda Norton. Mrs. Norton will serve as the primary liaison between LANTDIVFACENCOM and the ESE Project Manager; her phone number is (804) 445-4801 during working hours. All ESE project personnel and subcontractors are directly or indirectly responsible to the client. The client contacts, however, must comply with all applicable portions of the HASP when in areas covered by its provisions.

3.0 REGULATORY REQUIREMENTS

Occupational Safety and Health Administration (OSHA) standards 29 CFR 1910 and 1926 apply to work under this site-specific safety plan. Detailed OSHA requirements for hazardous waste operations are contained in 29 CFR 1910.120, "Final Rule for Hazardous Waste Site Operations and Emergency Response." Specific sections of 29 CFR 1910 and 1926 which apply include:

1. Section 1910.134: Respiratory Protection
2. Section 1910.1000: Air Contaminants
3. Section 1926.602: Material Handling Equipment

Additional guidance for hazardous waste operations may be found in the EPA publication "Standard Operating Safety Guides" (November 1984), National Institute of Occupational Safety and Health NIOSH/OSHA/US Coast Guard (USCG)/EPA publication "Occupational Safety and Health Guidance manual for Hazardous Waste Site Activities" (October 1985), and US Army Corps of Engineers (USACE) publication "Safety and Health Requirements Manual" (revised October 1984).

Health and safety related air monitoring data generated during the project will become part of the written record. Both medical and air monitoring data will be retained as required by OSHA in various standards (29 Code of Federal Regulations (CFR) 1910.20, 1910.1018, 1910.1025). Training records are maintained in project files and on personal identification cards and will be available for inspection at all times. Subcontractors will be required to have similar documents available for inspection as required.

4.0 TRAINING

All ESE site personnel and subcontractors for the CA field investigation will have completed an extensive 40-hour training course and will have worked at least three days at a hazardous waste site. An outline of the ESE training course is shown in Table 4-1. All subcontractors and site visitors will be required to provide proof of equivalent training prior to entering an exclusion zone. The FTL will have completed an additional 8 hours of waste site management training. At least one member of the field team will be trained to perform cardiopulmonary resuscitation (CPR) and first aid.

Table 4-1.

ESE Hazardous Waste/Materials Site Investigations Training Course

Safety Plans
Fundamentals of Industrial Hygiene
Properties of Hazardous Materials/Compatibility Testing, Shipping, and Handling of Samples/Chain of Custody
Levels of Personal Protection
Air Characterization (includes Hands-On Session)
Hotline Systems
Decontamination Operation
Emergency Response
Air-Purifying Respirators (APR) and Fit-Testing
Air-Supplying Respirators (ASR)
Field Exercises, Air-Purifying Respirators, and Self-Contained Breathing Apparatus (SCBA), Levels A, B, and C
Field Exercises (Site Zones and Sampling Operations)
Confined Space Entry
Review of Regulations
Engineering Controls

Source: ESE, 1991

5.0 MEDICAL EXAMINATIONS

All onsite ESE personnel for this project will be required to have the medical examination consistent with the parameters outlined in Table 5-1. This examination is given annually; more often if specified by the attending physician. All site visitors and subcontractors will be required to participate in an equivalent medical surveillance program, including monitoring for site contaminants prior to entering the exclusion zone. All medical examinations shall include certification by the physician of the employee's ability to wear a negative-pressure respirator and to perform strenuous work. If a person sustains an injury or contracts an illness related to work onsite that results in lost work time, he must obtain written approval from a physician to regain access to the site.

Table 5-1
Medical Monitoring Program

Basic physical exam
Heart status and functions (EKG)
Chest X-ray (Roentgenogram posterior-anterior)
Pulmonary function--forced vital capacity, forced expiratory volume at 1 second and reserve volume
Blood--full SMAC Series
Hemoglobin--cell counts, protein levels
Heavy metals
Liver function--full enzyme profile
Renal function--BUN, Creatinine, Creatine/Creatinine ratio, lipoprotein count and differential, uric acid
Urinalysis
Audiometry--audio spectrum response of ear
Eye--physical condition, visual acuity

Source: ESE, 1991

6.0 SITE HAZARD EVALUATION

6.1 Chemical Hazards

Site contaminants identified during previous investigations include volatile and semivolatile organics, heavy metals, and oil and grease. Principal exposure pathways for personnel engaged in field activities at the site include dermal contact, inhalation, and ingestion. Known contaminants of concern are discussed below:

- 1,1,1-trichloroethane (TCA), also known as methyl chloroform: Chemical abstract service (CAS) Number 71-55-6; OSHA permissible exposure limit (PEL) - 350 ppm; 8-hour time-weighted average (TWA); immediately dangerous to life or health (IDLH) level - 1000 ppm. Routes of exposure are: inhalation, ingestion, and corneal contact. Symptoms of exposure include: headaches, weariness, central nervous system (CVS) depression, poor equilibrium, irritated eyes, dermatitis, and cardiac arrhythmia. Target organs are the skin, CNS, cardiovascular system (SVS), and eyes.
- Phenol: CAS Number 108-95-2; OSHA PEL - 5 ppm; 8-hour TWA; IDLH level - 250 ppm. Routes of exposure are: inhalation, skin absorption, ingestion, and corneal contact. Symptoms of exposure include: irritation to the eyes, nose, and throat, anorexia, weakness, muscle aches, dark urine, cyanosis, liver and kidney damage, tremors and convulsions, and skin burns. Target organs are the liver, kidneys, and skin.
- Acetone: CAS Number 67-64-1; OSHA PEL - 1000 ppm; 8-hour TWA; IDLH level - 20,000 ppm. Routes of exposure are: inhalation, ingestion, and corneal contact. Symptoms of exposure include: irritation to the eyes, nose, and throat, dizziness, and dermatitis. Target organs the respiratory system and skin.

- Dimethylphthalate: CAS Number 131-11-3; OSHA PEL - 5 mg/m³; 8-hour TWA; IDLH level - 9300 mg/m³. Routes of exposure are: ingestion, inhalation, corneal contact. Symptoms of exposure include: irritation to nasal passages, upper respiratory system, stomach, and eye pain. Target organs are the respiratory system and gastrointestinal tract.
- Inorganic lead: CAS Number 7439-92-1; PEL - 0.05 mg/m³; 8-hour TWA; IDLH level is not applicable. Routes of exposure are inhalation, ingestion, and corneal contact. Symptoms of exposure include: weariness, insomnia, constipation, abdominal pain, hypotension, anemia, and gingival lead line. Target organs are the gastrointestinal tract, CNS, kidneys, blood, and gums.

not an organ

6.2 Physical and Mechanical Hazards

Activities onsite may include:

- Site Characterization
- Site Air Monitoring
- Installation and Sampling of Groundwater Monitor Wells
- Soil gas survey
- Site Topographic Surveying
- Collection of Surface and Subsurface Soil
- Geophysical Surveying

Physical hazards associated with these activities are varied and include:

vehicle/pedestrian collisions, fire, handling heavy material, equipment operations resulting in contact and crushing type injuries and use of air- and electrically-powered tools that may result in abrasions, contusions, lacerations, etc. The potential for such hazards necessitates the use by all onsite personnel of personal protective clothing to include coveralls, safety gloves or boots, and hard hats. Additionally, personnel engaged in physical labor are to wear sturdy work gloves.

6.2.1 Motor Vehicles and Motorized Equipment

All motor vehicles will be maintained in a safe operating condition and in accordance with local and state safety requirements. All vehicles and moving equipment will be operated onsite and enroute to and from sites in accordance with state and local motor vehicle regulations for speed, lights, warning signals, passenger capacity, and operation. If any equipment is left unattended at night adjacent to a highway or construction area, it will be provided with suitable barricading, light reflectors, or other visual warnings to identify its location.

Any equipment, including drill rigs, earth-moving equipment, and other mechanical equipment, will be operated in strict compliance with the manufacturer's instructions, specifications, and limitations, as well as any applicable regulations. The operator is responsible for inspecting the equipment daily to ensure that it is functioning properly and safely. This inspection will include all pins, pulleys connections subject to faster than normal wear, and all lubrication points.

Hand signals to equipment operators will be the commonly accepted industry standard signals for the type of equipment being used. Only one person will signal the equipment operator at any given time.

When equipment with moving booms, arms, or masts is operated in the vicinity of overhead hazards, the operator, with assistance from the designated signaling person, will ensure that moving equipment parts equipment maintain safe clearances to the hazards. Equipment will be kept away from energized electrical lines by at least 16 feet for lines rated at 50 kV and above.

Drill rigs and other equipment not specifically designed to move with an elevated boom, mast, or arm will be returned to traveling position and condition before being moved.

6.2.2 Portable Equipment and Tools

All equipment and tools will be inspected prior to each day's use and as often as necessary to ensure safe usage. Defective equipment and tools will be removed from service immediately. Examples of defective tools include: hooks and chains stretched beyond allowable deformations, cable and ropes with more than the allowable number of broken strands, missing grounding prongs on power tools, defective on/off switches, mushroomed heads of impact tools, sprung wrench jaws, missing or broken handles or guards, and wooden handles that are cracked, splintered, or loose. All equipment and tools will be used within their rated capacities and capabilities.

Pneumatic and hydraulic tools and equipment will be used in accordance with manufacturer's instructions and applicable OSHA standards, and will be inspected daily by trained operators. All pressure and vacuum connections will be secured with suitable means to minimize damage and potential for injury caused by failed connections. No safety device will be removed, modified, or otherwise compromised for any reason.

Electrical equipment, including pumps, sampling equipment, and meters, will be inspected to ensure that they are in good condition and properly working prior to onsite use. Only approved, listed equipment and components will be used. All connections will be made in accordance with National Electric Code practices. All equipment and devices will be properly grounded or bonded to an adequate grounding mechanism. Only equipment listed as explosion-proof will be used in areas with explosivity sustained at or above 10 percent of the lower explosive limit (LEL).

Whenever possible, equipment should not be driven into the ground, but placed into an augered hole. All onsite personnel will exercise due care when working with drilling equipment to eliminate becoming entangled, crushed, or otherwise injured. No loose clothing or unconfined long hair will be permitted in the immediate area of any operating drilling tools or equipment. Probes and other pieces of equipment that are driven into the ground will be placed using a slide hammer to minimize potential for crushing injury.

6.2.3 Excavation and Trenching

No excavation or trenching is necessary. However, while clearing the site for any drilling, employees will wear appropriate personal protective equipment for the hazards present as determined by the SSO.

6.2.4 Demolition and Tank Removal

No demolition or tank removal will be undertaken.

6.2.5 Confined Spaces

No confined space entry will be required during the remedial investigation.

7.0 AIR MONITORING

7.1 General

An air monitoring program is fundamental to the safety of onsite and offsite personnel. Total organic vapor (TOV) levels associated with onsite activities will be monitored with a flame ionization detection (FID) instrument (OVA). This instrument will be the primary source of information for upgrading personal protection. Monitoring equipment will be calibrated and maintained at least twice daily (before and after use) in accordance with manufacturer's recommendations.

ESE personnel will establish a daily background TOV level prior to initiating onsite activities. Under most circumstances, this level can be determined by taking multiple readings at representative locations along the perimeter of the site and averaging the results of sustained measurements. (A sustained measurement is defined as the arithmetic average of six readings taken at 10-second intervals.) If, due to site conditions, perimeter readings will not yield a truly representative background level, the SSO or ESE Corporate Health and Safety Officer will be consulted for guidance.

Decisions to upgrade or downgrade personal protection will be based on a sustained breathing zone TOV level that exceeds background levels. Breathing zone refers to the area from the top of the shoulders to the top of the head. Specific criteria for upgrading personal protection based on TOV levels is presented in Table 5-1. Appendix A contains a sample log sheet for recording TOV measurements. All field work will be carried out in a minimum of level D protection. TOV Air monitoring will be used to determine appropriate levels of personal protection.

i.e. ϕ ppm above background?

**Table 7-1
Organic Vapor Measurements and Personal Protection**

Total Organic Vapor*	Level of Protection**
Up to (background + 2 ppm)	D
(Background + 3 ppm) to (background + 10 ppm)	C
(Background + 11 ppm) to 500 ppm	B
Greater than 500 ppm***	A

* Based on sustained breathing zone measurements with FID

** As described in Appendix B

*** Call Project Safety Officer for Confirmation

Source: ESE, 1991

7.2 Site-Specific Air Monitoring Procedures

Specific air monitoring procedures to be used during field activities of the design phase are listed below.

1. Prior to drilling or other soil intrusion activity, measure exposure levels in boring area with FID to compare with the background measurement.
2. Measure FID level within borings with probe. If FID levels exceed 10 ppm in boring, take measurement of drillers' and geologists' breathing zones and take measurements in the bore hole with explosive gas meter.
3. If sustained breathing zone levels exceed (background + 3 ppm) in any work areas, upgrade applicable worker(s) to Level C.
4. If sustained breathing zone levels exceed (background + 11 ppm), or if the explosive gas meter registers \geq 20 percent LEL, consult with the SSO or a Corporate Health and Safety Officer before continuing operations.
5. Record measurements on the log sheet in Appendix A.

8.0 SITE SAFETY WORK PLAN

8.1 Perimeter Establishment

The work area perimeter will be established as a 25-foot radius from the sampling point, unless changed by the SSO.

8.2 Personal Protection

The following levels of protection will be used:

- Level D for surface investigations
- Modified D for subsurface investigations (foot and hand protection)
- Level C if sustained TOV readings in the breathing zone exceed background level + 3 ppm

Hard hats and eye protection will be worn by all personnel within 50 feet of active drilling and/or excavation operations, and whenever there is a potential for splashing or falling equipment parts. Sturdy work gloves are required for all personnel handling tools or performing manual labor.

8.3 Work Zones and Decontamination Procedures

Work zones and decontamination procedures will be established at the site by the SSO. These zones and procedures may be modified to fit applicable field conditions; however, proposed modifications must be approved by the ESE Project Manager and SSO prior to being implemented in the field.

All heavy equipment will be decontaminated with steam cleaners at a designated and marked location onsite. Water from the steam cleaner will be used to remove any visual contamination from drilling and excavation equipment.

8.4 Site Entry Procedures

The site can be entered through a gate located on Colonial National Historical Parkway (see Figure 8-1).

8.5 Team Members

The following individuals will require site access for the Landfill near the Incinerator (Site 1), Decontaminated Agent Disposal Area (Site 10), and Bone Yard (Site 11):

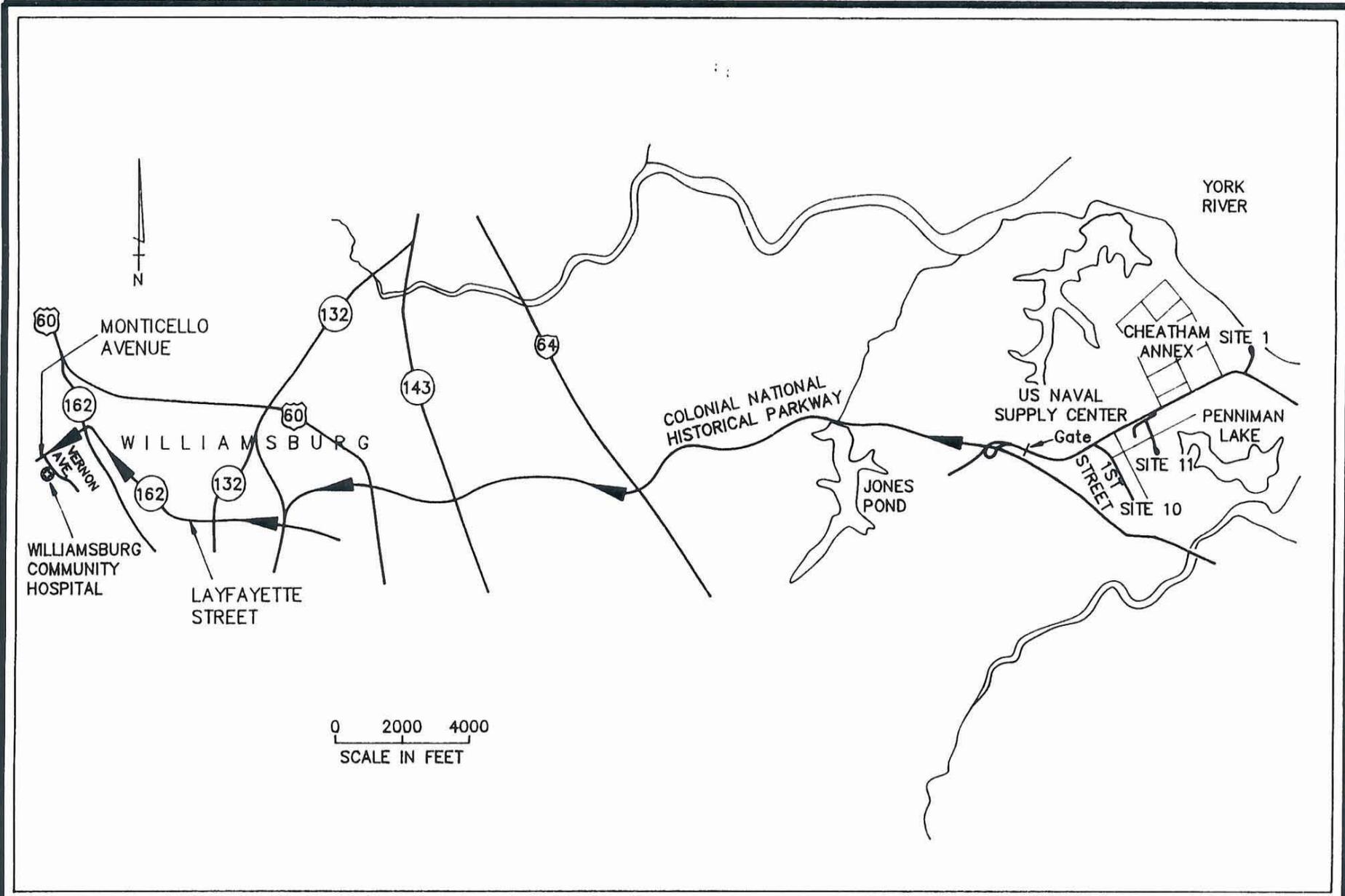
<u>Team Member</u>	<u>Responsibility</u>
Andrew Forrest*, **	Project Manager
Mark Skrobacz*	FTL, SSO
Ron Martin*	Field Team Member, Project Safety Manager
Bill Stafford	Field Team Member
Drilling Subcontractors	Drilling Operations

All of these individuals are certified to wear respiratory protection in accordance with criteria from 29 CFR 1910.134 and have taken a 40-hour Hazardous Materials Training course. The following designations indicate additional certifications: (*) CPR certified, and (**) Emergency First Aid certified.

8.6 Work Limitations

Work shall be limited to daylight hours and during normal weather conditions. Extremes in temperature and weather conditions (e.g., wind and lightning) will restrict working hours.

The following technique will serve as a guide for monitoring the body's recuperative ability toward excess heat. Monitoring of personnel wearing protective equipment and clothing will commence when the ambient temperature is 70°F or above. When temperatures exceed 85°F, workers will be monitored after every work period. Monitoring will include visual observations for signs of heat stress, measuring oral temperature during employee rest period (if oral temperatures exceed 100°F, lengthen



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SCALE
SHOWN

TITLE

SITE LOCATION MAP

DRAWN BY
LAF

APPROVED BY

JOB NO.
4901165

DWG. NO./ REV. NO.
ER65 / -

CLIENT
NSC CHEATHAM

FIGURE
8-1

break period and shorten work period), and measurement of radial pulse at the beginning of each rest period. If the heart rate exceeds 110 beats per minute at the beginning of a rest period, the next work period will be shortened by 10 minutes and the rest period will remain the same. If the pulse rate is 100 beats per minute at the beginning of the next rest period, the following work cycle will be shortened another 10 minutes.

8.6.1 Characteristics of Heat Stroke

Heat stroke is a profound disturbance of the body's heat-regulating mechanism, associated with high fever and collapse. This condition can result in convulsion, unconsciousness, and even death unless responsive measures are undertaken immediately. Direct exposure to sun, poor air circulation, poor physical condition, and advanced age are all contributing factors to heat stroke. Symptoms may include the following:

- Sudden onset
- Dry, hot, and flushed skin
- Dilated pupils
- Early loss of consciousness
- Full and fast pulse
- Uneven breathing rate
- Involuntary muscle twitching and convulsions
- Body temperature reaching 105°F and higher

Heat stroke constitutes a medical emergency and warrants immediate medical care. Remove the victim to a cool environment and remove as much clothing as possible. Reduce temperature by dousing the body with wet sponges, or preferably, wrap the victim in a wet towel and monitor breathing. If cold packs are available, apply to underarms, the neck, ankles, or any place where blood vessels close to the skin surface can be cooled. If the victim is conscious, have him/her drink Gatorade or comparable electrolyte-enhanced liquid.

Heat stroke prevention of heat stroke is strongly encouraged, especially under conditions of high ambient temperature and humidity. The following suggested work conditions are recommended:

1. Ensure that workers drink plenty of fluids during work breaks.
2. Ensure that frequent work breaks are scheduled, and that schedules are observed.
3. Revise work schedules to take advantage of cooler parts of the day (e.g., work in early morning hours or at night).
4. Observe the following general guidelines:

Ambient Temperature (°F)	Active Work Time (min/hr) using Level B Respiratory Protection
75 or less	50
80	40
85	30
90	20
100	0

Also, good hygienic standards must be maintained by frequent clothing changes and daily showering. Clothing must be permitted to dry during rest periods. If skin problems appear, consult medical personnel.

8.6.2 Characteristics of Frost-Bite

The human body "senses" cold as a result of two factors: air temperature and wind velocity. Cooling of the flesh increases rapidly as wind velocity increases. Frostbite can occur at relatively mild temperatures if wind is allowed to penetrate body insulation or attack exposed skin. For example, when the air temperature is 40°F and the wind velocity is 30 miles per hour, the exposed skin would be subject to an equivalent still air temperature of 13°F. Table 8-1 illustrates windchill indices and the associated hazards to exposed flesh. Protection will be taken to minimize exposed flesh, and layered clothing will be used, as appropriate.

**Table 8-1
Windchill Index**

Windspeed in mph	Actual Thermometer Reading (°F)									
	50	40	30	20	10	0	-10	-20	-30	-40
Calm	50	40	30	20	10	0	-10	-20	-30	-40
5	48	37	27	16	6	-5	-15	-26	-36	-47
10	40	28	16	4	-9	-21	-33	-46	-58	-70
15	36	22	9	-5	-18	-36	-45	-58	-72	-85
20	32	18	4	-10	-25	-39	-53	-67	-82	-96
25	30	16	0	-15	-29	-44	-59	-74	-88	-104
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109
35	27	11	-4	-20	-35	-49	-67	-82	-98	-113
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116
Over 40 mph (little added effect)			Little Danger (for properly clothed person) 50°F to 20°F				Increasing and Great Danger (danger from freezing of exposed flesh) 10°F to -40°F			

Source: National Safety Council, 1982.

9.0 STANDARD OPERATING PROCEDURES

9.1 General Safety Rules

In addition to the specific requirements of this site-specific HASP, common sense should prevail at all times. The following general safety rules and practices will be in effect at the site:

1. The site will be suitably marked or barricaded as necessary to prevent unauthorized visitors, but will not hinder emergency services, if needed.
2. All open holes, trenches, and obstacles will be properly barricaded in accordance with local site needs. These needs will be determined by proximity to traffic (both pedestrian and vehicular) and the location of the hole, trench, or obstacle. If holes are required to be left open during non-working hours, they will be adequately decked over or barricaded and sufficiently lighted.
3. Prior to conducting any digging or boring operations, underground utility locations will be identified. The engineer-in-charge (EIC) and local utility authorities will be contacted to provide locations of underground utility lines and piping. All boring, excavation, and other site work will be planned and performed with consideration for underground lines.
4. ~~Smoking and ignition sources in the vicinity of flammable or contaminated material are prohibited.~~ See #9
5. Drilling, boring, movement, and use of cranes and drilling rigs; erection of towers; movement of vehicles and equipment; and other activities will be planned and performed with consideration for the location, height, and relative position of aboveground utilities and fixtures, including signs, lights, buildings, other structures and construction, and natural features such as trees, boulders, bodies of water, and terrain.
6. When working in areas where flammable vapors may be present, particular care will be exercised with tools and equipment that may be sources of ignition. All tools and equipment so provided will be properly bonded and/or grounded.

7. Approved and appropriate safety equipment, as specified in this site-specific HASP (e.g., eye protection, hard hats, foot protection, respirators) will be worn in required areas. In addition, eye protection will be worn when handling contaminated soil and water.
8. Beards ~~that~~ interfere with respirator fit ^{and therefore} are not allowed within the site boundaries. This is necessary because all site personnel may be called upon to use respirator protection.
9. No smoking, eating, or drinking will be allowed in the designated work zone.
10. Tools and hands will be kept away from the face.
11. Personnel will shower at the end of each shift, or as soon as possible after leaving the site.
12. Each sample will be treated and handled as through it were extremely toxic.
13. Persons with long hair and/or loose-fitting clothing that could become entangled in power equipment are not permitted in the work area.
14. Horseplay is prohibited in the work area.
15. Work while under the influence of intoxicants, narcotics, or controlled substances is prohibited.

9.2 Accident Prevention Plan/Accident Reporting

The purpose of the site-specific HASP is to prevent accidents and minimize the impact of an accident should one occur (i.e., the site-specific HASP is the accident prevention plan).

All accidents and potential exposures must be reported to the SSO immediately. Prompt reporting is essential to ameliorating the hazard and ensuring the well-being of the affected individual(s). The SSO will notify the ESE Project Manager of any serious accidents or exposures. The SSO or other designated field team members will have current CPR and first aid training, which will be administered to affected personnel under the SSO's direction. For serious accidents, the nearest ambulance service will be contacted to transport the injured personnel to the nearest medical facility (see Section

10.0). The SSO will have established contact with involved medical authorities to ensure that medical facility personnel are knowledgeable of the activities occurring at the site and the types of potential exposures or accidents that might occur.

A formal report of an OSHA-recordable accident or event will be filed on behalf of the employee by ESE. All reports must be received within two working days.

9.2.1 Worker Injury Response Plan

If an employee working in a contaminated area is physically injured, Red Cross first aid procedures will be followed. Depending on the severity of the injury, emergency medical response may be sought. Emergency phone numbers will be conspicuously posted at the command post. If the injured individual can be moved, he/she will be taken to the edge of the work area (on a stretcher, if needed) where contaminated clothing will be removed (if possible), emergency first aid will be administered, and transportation to local emergency medical facility will be arranged.

Minor Accidents: If the injury to the worker is chemical in nature (e.g., overexposure), the following first aid procedures are to be instituted as soon as possible:

- a. Eye Exposure - If contaminated solid or liquid gets into the eyes, wash eyes immediately with large amount of water and lift the lower and upper lids occasionally. Obtain medical attention immediately. (For obvious reasons, contact lens are prohibited for individuals working in the contaminated area.)
- b. Skin Exposure - If contaminated solid or liquid gets on the skin, promptly wash the contaminated skin using soap or mild detergent and water. If solids or liquids penetrate through the clothing, remove the clothing immediately and wash the skin using soap or mild detergent and water. Obtain medical attention immediately if symptoms warrant.

c. Breathing - If a person breathes in large amounts of organic vapor, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the affected person warm and at rest. Obtain medical attention as soon as possible.

d. Swallowing - If contaminated solid or liquid has been swallowed and the person is conscious, feed the individual large quantities of salt water immediately and induce vomiting (unless the person is unconscious). Obtain medical attention immediately.

→ unless otherwise indicated on the appropriate MSDS! This is just a universal remedy & can result in greater harm to individual.

A list of chemical compounds *and their MSDS's* likely to be found on the site will be conspicuously posted in the command trailer. The SSO is responsible for making attending emergency medical response personnel aware of possible contaminants causing the medical emergency. An identical list of compounds shall also be maintained by the Corporate Health and Safety Officer. Any incident involving worker exposure or injury should be reported to the Project Manager and Corporate Health and Safety Officer immediately.

Major Accidents: Major accidents which pose a potential immediate threat to life, limb, or health shall be handled in the following manner:

- a. The injured individuals will be administered to by the SSO or other member of the work party holding current certification in CPR and first aid.
- b. The necessary emergency response services (ambulance, fire department, hospital, poison control center) will be notified immediately.

9.3 Contingency Plan

9.3.1 Fire Control

in any controlled areas on site at any time.
No smoking will be allowed ~~during drilling or sampling activities~~. Fire extinguishers will be available at sampling sites for use on small fires. All samples shall be handled as though extremely toxic, flammable, and reactive. The SSO will post, in a conspicuous place, the telephone number of the nearest fire station and local emergency personnel to be contacted in case of a fire emergency.

9.3.2 Spill Control

In the event of a spill, the SSO will be notified immediately. The important factors are that no personnel are exposed to vapors, gases, or mists and the liquid does not ignite. Waste spillage must not be allowed to contaminate any adjacent surface water and must be contained onsite, if possible, while avoiding worker exposure. Small dikes may be erected to contain spillage, if appropriate, until proper spill response can be executed. Subsequent to cleanup activities, the SSO will conduct a survey of the area to ensure that no residual toxic or explosive vapors are present.

10.0 EMERGENCY INFORMATION

All emergency information, including phone numbers and routes to emergency medical care, will be posted onsite and/or carried by each field team member.

10.1 Local Emergency Contacts

Ambulance (804) 887-7333/7222

Fire Department (804) 887-7333

Hospital - First Aid - Naval Weapons Station (804) 887-4911

Hospital - Emergency - Williamsburg Community Hospital (804) 253-6005

Police (804) 887-7222

Client Contract, Work Number: Chick Salyer (804) 887-7373

Agency Contact, Work Number: Brenda Norton (804) 445-4801

ESE Project Director (703) 318-8900

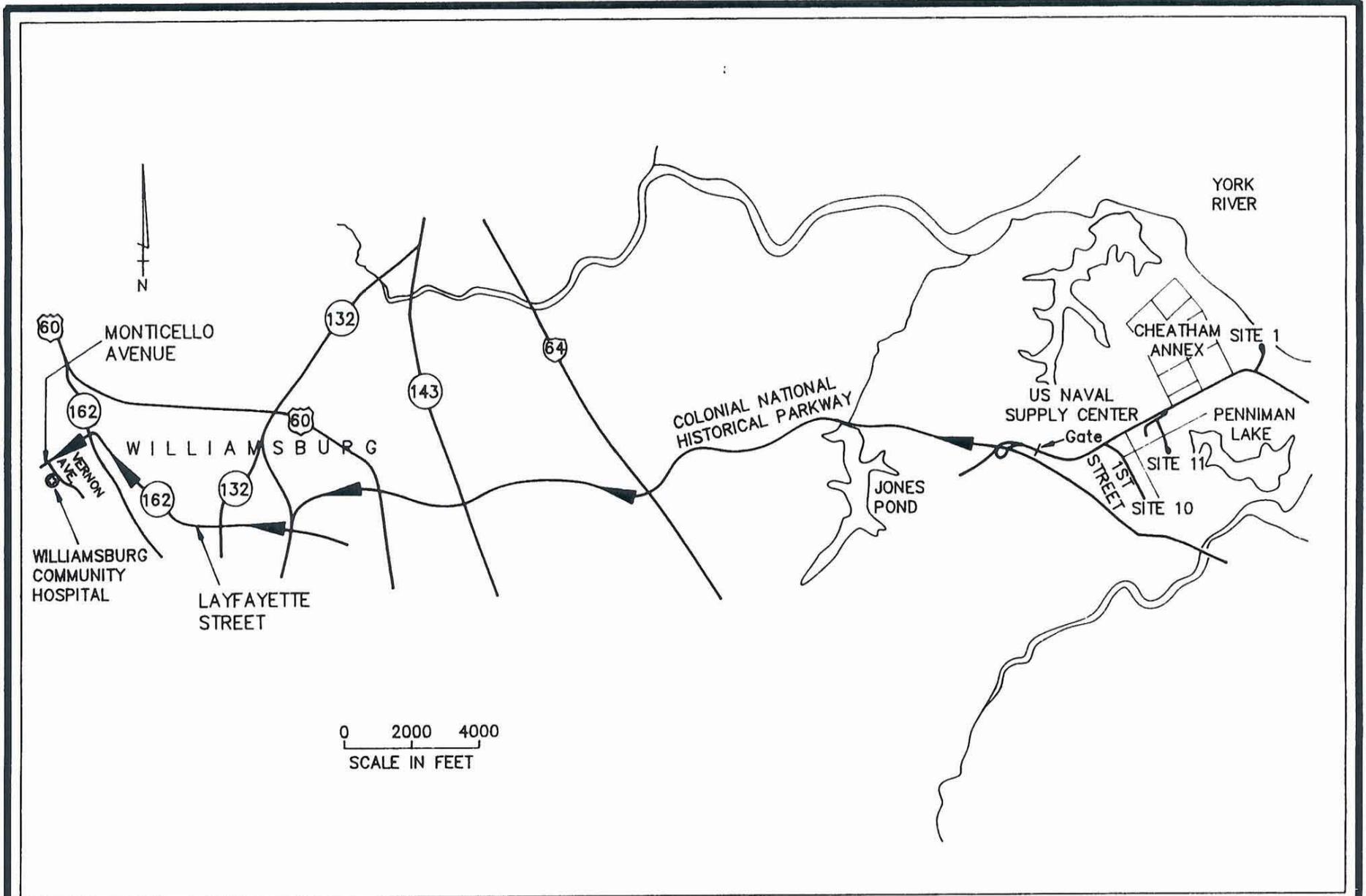
10.2 Route to Nearest Medical Care Facility

The route to the hospital from the site is as follows: Take (west) right onto Colonial National Historical Parkway out of gate; turn right (west) onto Lafayette Street (Route 162) and right onto Montesello Avenue (Figure 10-1).

Level of protection on this site will vary from Level D to Level C.

Level D

- Mobilization from boring to boring can be done in Modified Level D, except for movement through or near visible chemical seeps (see Level C below).



Environmental
Science &
Engineering

DATE
5-21-91

SCALE
SHOWN

TITLE

ROUTE TO WILLIAMSBURG
COMMUNITY HOSPITAL

DRAWN BY
LAF

APPROVED BY

JOB NO.
4901165

DWG. NO./REV. NO.
ER65 / -

CLIENT
NSC CHEATHAM

FIGURE
10-1

Level C

During drilling, the geologist work area will be a minimum of 10 feet upwind of the drill boring area.

- Initially, the geologist work area and any individuals within a 25-foot radius of the bore hole or well, will be under Level C protection.
- If exposure in the driller's breathing zone remains below 5 ppm, during drilling operations and exposure at geologist work area is zero (as measured with PID), level of protection can be downgraded to modified Level D.
- If exposure at geologist work area exceeds 5 ppm as measured with PID, upgrade to Level B.
- If wind conditions vary so that geologist work area is not always upwind of drill boring, Level C protection will be maintained.
- Any mobilization or drilling conducted within 10 feet of visible chemical seeps will be conducted minimally in Level C protection. Exposures greater than 5 ppm with PID will be reason to upgrade to Level B.
- Within these guidelines, the SSO can modify level of protection depending on site conditions. Attempts should be made to confirm with Project Safety and Health Officer (see Air Monitoring Section 7.0).

APPENDIX A
Forms

**ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
PROJECT SPECIFIC SAFETY AND HEALTH PLAN**

PROJECT NAME: _____

PROJECT NUMBER: _____

PROJECT MANAGER: _____

CORPORATE SAFETY OFFICER: _____

Check if Designee

DECLARATION OF UNDERSTANDING

I have read and understand this Site-Specific Safety and Health Plan (SSHP) prepared for the Defense Personnel Support Center in Philadelphia, Pennsylvania, and agree to abide by the procedures and limitations specified. I also certify that all medical monitoring and health and safety training requirements which may be applicable to my employment at this site are current and will not expire during onsite activities.

NAME	EMPLOYEE NO.	SS NO.	DATE
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

NOTE: All subcontractors to ESE must abide by the specifications and limitations contained in this SSHP.

D12/PPG 6/89h

DECLARATION OF UNDERSTANDING FORM

SOURCE: ESE.

**ENVIRONMENTAL SCIENCE
& ENGINEERING, INC.**

This brief Medical Data Sheet will be completed by all onsite personnel and will be kept onsite during the conduct of site operations. Completion is required in addition to compliance with the Medical Surveillance Program requirements described in this HASP. This data sheet will accompany any personnel when medical assistance is needed or if transport to hospital facilities is required.

Project _____

Name _____ Home Telephone _____

Address _____

Age _____ Height _____ Weight _____

Name of Next of Kin _____

Drug or other Allergies _____

Particular Sensitivities _____

Do You Wear Contacts? _____

Provide a Checklist of Previous Illnesses _____
or Exposures to Hazardous Chemicals _____

What medications are you presently using? _____

Do you have any medical restrictions? _____

Name, Address, and phone number of personal physician:

ESE REPORT OF ACCIDENT, INJURY OR ILLNESS

REVISION 1.0 03/03/88

REPORT NUMBER:

IDENTIFICATION

Division/Operating Unit/Contractor: _____ Employee Name: _____

Social Security No.: _____ Supervisor: _____

Employee Number: _____ Sex: M F Age: _____ Project (or N/A): _____

Grade / Job Title: _____ Years of Experience: _____

Date of Occurrence: _____ Time: _____ Date Reported: _____ Time: _____

Emp. Home Address: _____ Home Telephone No.: _____

INCIDENT

Outcomes	Type:	Recordability:
1 <input type="checkbox"/> Damage	6 <input type="checkbox"/> Fire	11 <input type="checkbox"/> Equipment Failure
2 <input type="checkbox"/> Injury or Illness	7 <input type="checkbox"/> Explosion	12 <input type="checkbox"/> Loss of Time
3 <input type="checkbox"/> Fatality	8 <input type="checkbox"/> Gas or Vapor Release	13 <input type="checkbox"/> Theft, Burglary
4 <input type="checkbox"/> Close Call (Near Miss)	9 <input type="checkbox"/> Spillage	14 <input type="checkbox"/> Vehicular
5 <input type="checkbox"/> Potential for Loss	10 <input type="checkbox"/> Contamination	15 <input type="checkbox"/> Other
		16 <input type="checkbox"/> First-Aid
		17 <input type="checkbox"/> Medical Treatment
		18 <input type="checkbox"/> Restricted Work
		19 <input type="checkbox"/> Lost Time
		20 <input type="checkbox"/> Off Job

NOTE: Complete the information on the reverse side of this form if boxes 2,3 or 16 through 20 were checked.

Describe what happened:

What: _____

Who: _____

Where: _____ Street Address: _____

City: _____ State: _____ Zip Code: _____

How: _____

ANALYSIS

Describe Hazard(s) - Unsafe Conditions and/or Acts - causing the incident:

Describe the Underlying Cause(s) and/or Failure(s):

CONTROLS

Recommended Action and System Changes:

Investigator: _____ (PRINT) _____ (SIGNATURE) Title: _____ Date: _____

ATTACH ADDITIONAL SHEETS IF NECESSARY

Figure 7-2 (Page 1 of 2)
ACCIDENT, INJURY, OR ILLNESS REPORT FORM

SOURCE: ESE.

ENVIRONMENTAL SCIENCE
& ENGINEERING, INC.

ESE INJURY/ILLNESS REPORT

MEDICAL TREATMENT

Was medical treatment received: YES NO Did injury/illness result in a lost work day: YES NO

If YES, what was the last date worked: _____

Name and address of medical facility:

Name, address and telephone number of examining physician:

INJURY/ILLNESS DESCRIPTION

Describe nature of injury or illness:

Part of body injured: _____

Describe diagnosis and/or treatment:

Supervisor's Signature: _____ Date: _____

FOR HUMAN RESOURCES DIVISION USE ONLY

Workers Compensation report filed: YES NO Date: _____

OSHA Recordable injury or illness: YES NO Log Number: _____

Director of Human Resources

Date

ESE Corporate Safety Manager

Date

**Figure 7-2 (Page 2 of 2)
ACCIDENT, INJURY, OR ILLNESS REPORT FORM**

SOURCE: ESE.

**ENVIRONMENTAL SCIENCE
& ENGINEERING, INC.**

APPENDIX B
Personal Protective Equipment Levels

APPENDIX B

PERSONAL PROTECTIVE EQUIPMENT LEVELS

PERSONAL PROTECTIVE EQUIPMENT--LEVEL A

1. Open-circuit, pressure-demand, self-contained breathing apparatus (SCBA)
2. Totally encapsulated suit
3. Gloves, inner (surgical type)
4. Gloves, outer (chemical protective)
5. Boots, chemical protective, steel toe and shank
6. Booties, chemical protective

CRITERIA

1. Sites known to contain hazards which:
 - a. Require the highest level of respiratory protection (as stated above)
 - b. Will cause illness as a result of personal exposure
 - c. Permit a reasonable determination that personal exposure could occur to any part of the body
2. Sites for which the Project Manager and/or Site Safety Manager make a reasonable determination that, based on the lack of information to the contrary, the site may be described as stated directly above.

PERSONAL PROTECTIVE EQUIPMENT--LEVEL B

1. Open-circuit, pressure-demand SCBA or airline
2. Chemical protective Saranex® suits
3. Gloves, inner (surgical type)
4. Gloves, outer (chemical protective)
5. Boots, chemical protective, steel toe and shank
6. Booties, chemical protective

CRITERIA

1. Sites known to contain hazards which require the highest level of respiratory protection as stated previously and which:
 - a. Will cause illness as a result of personal exposure
 - b. Permit a reasonable determination that personal exposure to areas of the body not covered by Level B protective clothing is unlikely
2. Sites for which the Project Manager and/or Site Safety Manager make a reasonable determination that, based on the lack of information to the contrary, the site may be described as stated above.

PERSONAL PROTECTIVE EQUIPMENT--LEVEL C

1. Full face-piece, air-purifying respirator
2. Emergency escape oxygen pack (carried)
3. Chemical protective suits
4. Gloves, inner (surgical type)
5. Gloves, outer (chemical protective)
6. Boots, chemical protective, steel toe and shank
7. Booties, chemical protective

CRITERIA

1. Sites known to contain hazards which:
 - a. Do not require a level of respiratory protection greater than the level afforded by air-purifying respirators (nominal protection of 10), as stated above
 - b. Will cause illness as a result of personal exposure
 - c. Permit a reasonable determination that personal exposure to areas of the body not covered by Level C protective clothing is unlikely
2. Sites for which the Project Manager and/or site Safety and Health Officer make a reasonable determination that, based on the lack of information to the contrary, the site may be described as stated previously.

PERSONAL PROTECTIVE EQUIPMENT--MODIFIED LEVEL D

1. Coveralls, cotton
2. Boots/chemical protective, steel toe and shank
3. Safety glasses
4. Hardhat with optional face shield (where overhead hazards exist)
5. Nitrile gloves (to be used when handling samples)
6. Tyvek® coveralls used at discretion of SSO
7. Air-purifying respirator (readily available)

PERSONAL PROTECTIVE EQUIPMENT--LEVEL D

1. Coveralls, cotton
2. Boots/shoes, safety
3. Safety glasses
4. Hardhat (where overhead hazards exist)

CRITERIA

Sites where the Project Manager and/or Site Safety and Health Officer make a reasonable determination that hazards due to exposure to hazardous materials are unlikely.

ADDITIONAL PERSONAL PROTECTION

In addition to personal protective equipment, field personnel having duties on or near the hazard site should have ready access to:

1. An fully stocked industrial-size first-aid kit
2. An eyewash kit
3. At least 6 gallons of potable water in a pressurized container to permit decontamination in event of accidental skin or eye contact with chemicals
4. Field instrumentation: pH meters, photoionization meters, etc.
5. Litmus paper

APPENDIX C
Work Zones and Decontamination Procedures

Appendix C

Work Zones and Decontamination Procedures

Level C Decontamination Procedures

Equipment Worn

The full decontamination procedure is for workers wearing Level C protection (with tapes joints between gloves, boots and suit). Such protection consists of:

1. One-piece, hooded, chemical resistant splash suit
2. Canister-equipped full-face mask
3. Hard hat
4. Chemical-resistant boots with steel toe and shank
5. Boot covers
6. Inner and outer gloves

Procedure for Full Decontamination

Station 1: Segregated Equipment Drop

Deposit equipment used on the site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Each will be contaminated to a different degree. Segregation at the drop reduces the possibility of cross contamination.

Necessary equipment includes:

1. Containers of various sizes
2. Plastic liners
3. Plastic drop cloths

Station 2: Boot Cover and Glove Wash

Scrub outer boot covers and gloves with decon solution or detergent/water solution.

Necessary equipment includes:

1. Container (20 to 30 gallon)
2. Decon Solution
3. Detergent/water solution
4. Two or three long-handle, soft bristle scrub brushes

Station 3: Boot Cover and Glove Rinse

Rinse off decon solution from Station 2 using copious amounts of water. Repeat as many times as necessary.

Necessary equipment includes:

1. Container (20 to 30 gallon)
2. High pressure spray unit
3. Water
4. Two or three long-handle, soft-bristle scrub brushes

Station 4: Tape Removal

Remove tape around boots and gloves and deposit in container with plastic liner.

Necessary equipment includes:

1. Container (20 to 30 gallon)
2. Plastic liners

Station 5: Boot Cover Removal

Remove boot covers and deposit in container with plastic liner.

Necessary equipment includes:

1. Container (20 to 30 gallon)
2. Plastic liner
3. Bench or stool

Station 6: Outer-Glove Removal

Remove outer gloves and deposit in container with plastic liner.

Necessary equipment includes:

1. Container (20 to 30 gallon)
2. Plastic liner

Station 7: Suit/Safety Boot Wash

Thoroughly wash splash suit and safety boots. Scrub with long-handle, soft-bristle scrub brush and copious amounts of decon solution or detergent/water solution. Repeat as many times as necessary.

Necessary equipment includes:

1. Container (30 to 50 gallon)
2. Decon solution
3. Detergent/water solution
4. Two or three long-handle, soft-bristle scrub brushes

Station 8: Suit/Safety Boot Rinse

Rinse off decon solution or detergent/water solution using copious amounts of water. Repeat as many times as necessary.

Necessary equipment includes:

1. Container (30 to 50 gallon capacity)
2. High-pressure spray unit
3. Water
4. Two or three long-handle, soft-bristle scrub brushes

Station 9: Canister or Mask Change

If worker leaves Exclusion Zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer glove and boot covers donned, and joints taped. Worker returns to duty.

Necessary equipment includes:

1. Canister (or mask)
2. Tape
3. Boot covers
4. Gloves

Station 10: Safety Boot Removal

Remove safety boot and deposit in container with plastic liner.

Necessary equipment includes:

1. Container (30 to 50 gallons)
2. Plastic liners
3. Bench or stool
4. Bootjack

Station 11: Splash Suit Removal

With assistance of helper, remove splash suit. Deposit in container with plastic liner.

Necessary equipment includes:

1. Container (30 to 50 gallon)
2. Bench or stool
3. Plastic liner

Station 12: Inner-Glove Wash

Wash inner gloves with decon solution or detergent/water solution that will not harm skin. Repeat as many times as necessary.

Necessary equipment includes:

1. Decon solution
2. Detergent/water solution
3. Basin or bucket

Station 13: Inner-Glove Rinse

Rinse inner gloves with water. Repeat as many times as necessary.

Necessary equipment includes:

1. Water
2. Basin or bucket
3. Small table

Station 14: Facepiece Removal

Remove facepiece. Avoid touching face with gloves. Deposit facepiece in container with plastic liner.

Necessary equipment includes:

1. Container (30 to 50 gallon)
2. Plastic liners

Station 15: Inner-Glove Removal

Remove inner gloves and deposit in container with plastic liner.

Necessary equipment includes:

1. Container (20 to 30 gallon)
2. Plastic liner.

Station 16: Inner-Clothing Removal

Remove clothing soaked with perspiration. Place in container with plastic liner. Do not wear inner clothing off the site since there is a possibility small amounts of contaminants have been transferring removing contaminated outer clothing.

Necessary equipment includes:

1. Container (30 to 50 gallon)
2. Plastic liner.

Station 17: Field Wash

Shower promptly upon exiting site. Wash hands and face repeatedly. Redress with clean clothes.

Modified Level C Decontamination Procedures

The preceding description outlines each station that is included in a complete worst-case decontamination protocol. Individual sites may not require as elaborate a decontamination reduction corridor and procedures. The following protocol may be used judiciously in situations representing lesser hazards:

Task 1: Set up decontamination reduction corridor.

- A. Select an area on level ground upwind of the work zone. Layout an area approximately 30 feet in length and 10 feet in width. Drive perimeter stakes in corners and attach visible marking flags. Attach survey tape to

perimeter stakes. The survey tape should be as close to the ground surface as possible, so as not to pose a tripping hazard to workers exiting the contaminated zone.

B. Procure the following equipment

1. Four 55-gallon steel drums
2. Large size hefty trash bags
3. Two 32-gallon plastic trash cans
4. Four standard cement cinder blocks
5. One 10-foot length 2x12 oak timber
6. One 8x4 laminated plywood board
7. One set sawhorse clamps
8. Eight 54" lengths of 2x4 lumber
9. One roll polyethylene plastic sheeting
10. Two metal folding chairs
11. Eight 10-quart plastic buckets
12. Four 20-gallon galvanized wash basins
13. Six long-handled wooden scrub brushes
14. Two gallons detergent dish washing liquid
15. Eight soft-bristled plastic brushes
16. Paper towels

C. Set up the decontamination reduction corridor in conformance with

Figure __. At the entrance of the decontamination corridor, set an oak timber on top of cinder blocks to serve as a bench for workers exiting the work area. Workers shall utilize the splash suit and boot cover wash prior to removing tape from glove and boot joints. Workers should enter the decontamination line progressing from least contaminated individual to most contaminated individual, if possible, on the basis of evident soiled

outer clothing. Each worker shall continue to wear the full-face respirator until the designated mask removal station.

- D. Equipment returned from the contaminated zone should be handed across the line and temporarily stored in a drop area until personnel have completed the personnel decontamination process. Equipment which appears obviously soiled should be placed within the contaminated area and not handed across the hot line. Level C protective equipment will be needed to clean this equipment.
- E. After removing and discarding tape from gloves and boots, step across the entry bench into the splashsuit rinse. Use long-handled brush to rinse splashsuit and inner boots.
- F. Proceed to chair and remove and discard splashsuit (saranex) in 55 gallon drum lined with a hefty trash bag.
- G. Proceed to outer glove rinse and drop station. This station will consist of a board at waist level supported by two auxiliary 55 gallon steel drums. The board will be wrapped in plastic. A 10-qt. plastic bucket half-filled with water and dishwashing liquid will serve as the outer glove rinse station. Rinse and remove outer gloves.
- H. At next station, remove full-face respirator mask. Loosen top strap first, exercising care to prevent hair from becoming entwined in strap. Remove mask and discard used cartridges in lined plastic garbage pail to left.

- I. At next station, sit in chair and remove inner neoprene boots, if desired, and change to work boots. Store inner boots to left of garbage pail.
- J. The final station on the decontamination line is a plywood work table at waist level. The table should be lined with plastic. Two buckets half-filled with water and dishwashing detergent will serve as handwash and hand rinse. The remaining portion of the table will be used to clean and package air monitoring equipment.
- K. Personnel exiting the contaminated area should be assisted by support personnel who themselves have already completed the decontamination procedure. Personnel rendering assistance should exercise care to prevent contact with contaminated equipment and clothing from personnel still in the decontamination process.
- L. Once decontamination is complete, lined drums containing used soiled splashsuits should be sealed until the next days use. Water from wash basins may have to be collected and disposed of as manifested hazardous waste, depending upon site requirements. Galvanized steel wash basins should be emptied and rinsed in preparation of the following days use.
- M. Secure decontamination area and return to command trailer.

APPENDIX D
Site Worksheet

Appendix D

Site Worksheet

ESE Site-Specific Health and Safety Plan Worksheet	Project Name:		
Check if Designee:	Project #:		
	Project Manager:		
	Corporate Safety Officer:		
Declaration of Understanding			
<p>I have read and understand this Health and Safety Plan (HASP), and agree to abide by the procedures and limitations specified. (Note: all personnel signing must be listed in part G. All subcontractors must abide by the procedures and limitations specified in this HASP.)</p>			
Name	Employee #	SS #	Date

A. General Project Information	
Site:	Date Prepared:
Location:	Prepared by:
Project Objective: <input type="checkbox"/> Preliminary Contamination Assessment <input type="checkbox"/> Contaminant Assessment <input type="checkbox"/> Remedial Action	Proposed Date of Activity:
	Background Review:
Prefield Briefing Date: <input type="checkbox"/> Complete <input type="checkbox"/> Partial	
Level of Protection: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> Modified D	Overall Hazard Estimate: <input type="checkbox"/> High <input type="checkbox"/> Moderate <input type="checkbox"/> Low <input type="checkbox"/> Unknown

B. Site/Material Characteristics	
Material Type: <input type="checkbox"/> Contaminated Soil <input type="checkbox"/> Saturated Soil <input type="checkbox"/> Contaminated Water <input type="checkbox"/> Free Product	
Facility Type: <input type="checkbox"/> Active <input type="checkbox"/> Inactive	
Facility Size:	Topography:
Significant Features:	
Site History:	
C. Hazard Evaluation	
Planned Activities: <input type="checkbox"/> Site Visit/Walkover Only	
Sampling: <input type="checkbox"/> Sediment <input type="checkbox"/> Soil <input type="checkbox"/> Air <input type="checkbox"/> Surface Water <input type="checkbox"/> Ground Water	
Installation: <input type="checkbox"/> Monitoring Wells <input type="checkbox"/> Recovery Wells <input type="checkbox"/> Treatment System <input type="checkbox"/> Other	
Removal: <input type="checkbox"/> Tanks, Piping <input type="checkbox"/> Contaminated Soil	
D. Work Plan Instructions	
Attach Map/Sketch and Identify: <input type="checkbox"/> Work Zones <input type="checkbox"/> Perimeter <input type="checkbox"/> Structures <input type="checkbox"/> Contaminated Areas <input type="checkbox"/> Location of First Aid Equipment <input type="checkbox"/> Location of Safety Equipment	
Personal Protection Levels Required: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> Modified D	
Additional Personal Protective Equipment:	
Monitoring Equipment: <input type="checkbox"/> PID <input type="checkbox"/> FID <input type="checkbox"/> Oxygen <input type="checkbox"/> Explosimeter <input type="checkbox"/> Other	

E. Site Operations/Decontamination	
Command Post Phone Number	Personal Decontamination Procedures: <input type="checkbox"/> Designated Hot-line <input type="checkbox"/> Contaminant Reduction Corridor
Equipment Decontamination Procedures: <input type="checkbox"/> Decontamination Pad <input type="checkbox"/> Steam Cleaning	
Equipment and Materials: <input type="checkbox"/> Drilling Rig <input type="checkbox"/> Backhoe <input type="checkbox"/> Crane <input type="checkbox"/> Other	
Site Entry Procedures:	
Team Size:	Pre-field Briefing Date:
Work Schedule:	
..	
Limitations:	

F. Emergency Precautions	
Emergency Actions:	
Fire and Explosions:	
<i>Injury:</i>	
Spill Control:	
Weather/Other:	
Potential Chemical Exposure: <input type="checkbox"/> Inhalation <input type="checkbox"/> Ingestion <input type="checkbox"/> Absorption <input type="checkbox"/> Other	
Emergency Contacts: Police: CHEMTREC: 800/424-9300	
Hospital/Emergency Medical Care Unit: Name: Address: Telephone:	
Route to Hospital (attach map):	

