Naval Ordnance Station

Building 731
Indian Head, Maryland

HEALTH AND SAFETY PLAN

October 1992

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SECTION 1 - INTRODUCTION

The following Health and Safety Plan (HSP) has been developed in accordance with the requirements set forth in 29 CFR Part 1910.120, *Hazardous Waste Operations and Emergency Response* and in conjunction with the OBG Technical Services (OBG Tech) Hazardous Waste Operations Standard Operating Procedures (see Appendices A through F).

The purpose of this HSP is to assign site-specific responsibilities, site-specific training requirements, establish site-specific personnel protective requirements, and to provide guidance for site-specific contingencies that may arise.

SECTION 2 - SITE BACKGROUND INFORMATION AND PROJECT PERSONNEL

2.01 Site Location

The remedial action site (Site 5) is comprised of two drainage ditches emanating from the southwest facing corners of Building 731, Naval Ordnance Station, Indian Head, MD.

2.02 Project Description and Scope of Work

The drainage ditches have been impacted by past photographic waste management practices originating within the building. These practices have resulted in elevated silver concentrations within ditch soils/sediments. Portions of the drainage ditch are within areas designated for a military construction project (MILCON P-059) and a segment of the ditch network lies in an area scheduled for expansion of the explosion berm. The Navy has elected to remediate the manmade segments of the drainage ditch network through excavation of soils/sediments exhibiting silver concentrations greater than 10 mg/kg, treatment of the excavate utilizing solidification/stabilization technology, followed by long-term on-site management through incorporation of the treated material within the on-site explosion berm expansion.

The following provides a breakdown of tasks included in the scope of work:

1. **Mobilization and Site Preparation**

   Any additional access roads/routes will be constructed as necessary. Support facilities will be mobilized to provide for personnel decontamination. The Contaminated Soils/Sediments Staging Area will be constructed adjacent to the treatment area. Silt fence will be installed along the exclusion zone. Two decontamination pads will be constructed for vehicle decontamination.

2. **Waste Excavation and Handling**

   The silver contaminated soils/sediment will be excavated from the areas as noted on Figure 1. The excavated soil will be transported to the Staging Area for storage until it is treated. The contaminated areas depicted in Figure 1 will be excavated as shown in Figure 4.

3. **Solidification/Stabilization**

   The excavated soil will be treated with the admixture approved by the Government Representative. The soils/sediment and additive will be mixed and sampled for TCLP metals.

4. **Placement/Compaction of Treated Material**

The treated soil will be placed in the foot print of the explosion berm and compacted as outlined in Section 02240.

5. **Ambient Air Monitoring**

Real-time exclusion zone air monitoring will be performed.

6. **Soil Cover**

A one-foot soil cover will be placed over the compacted treated soil.

7. **Stump Decontamination**

The up-righted stumps from the swale will be removed and decontaminated for disposal. The contaminated soil will be removed from the roots and the roots wash so that the stumps can be disposed off-site.

8. The restoration of the drainage ditch will be in accordance with Section 02221 and the disturbed grass areas will be restored in accordance with Section 02930. Upon completion of the restoration, the equipment brought to the site will be demobilized.

2.03 Project Personnel

Project Manager:	David M. Schramm
Project Supervisor:	Thomas Wehrle
Site Health and Safety Coordinator (SSHC):	Caroline W. Miller, CIH
Alternate SSHC:	Thomas Wehrle

SECTION 3 - HAZARD EVALUATION AND PERSONAL PROTECTIVE EQUIPMENT

3.01 Potential Health Hazards

CHEMICAL	PEL	IDLH	CHARACTERISTICS	ROUTES OF EXPOSURE	SYMPTOMS OF EXPOSURE
Silver	0.01 mg/m^3	No evidence	Metal: White, lustrous solid	Inhalation Ingestion Contact	Blue-gray eyes, nasal septum, throat, skin; irritation of the skin causing ulcerations; Gastro-intestinal disturbances.

3.02 Operations and Tasks to be performed

OPERATION/TASK	HAZARD	PPE REQUIRED
Mobilization and Site Preparation	Minimal	Level D
Waste Excavation and Handling	Inhalation Contact	Level C w/o respirator (immediately available)
Solidification/Stabilization	Inhalation Contact	Level C w/o respirator (immediately available)
Placement/Compaction of Treated Material	Inhalation Contact	Level C w/o respirator (immediately available)
Ambient Air Monitoring	Inhalation Contact	Level C w/o respirator (immediately available)
Soil Cover	Minimal	Level D
Stump Decontamination	Inhalation Contact	Level C w/o respirators (immediately available)
Restoration/Demobilization	Minimal	Level D

3.03 Site-specific Personal Protection

Coveralls: Tyvek®

Outer Gloves: Neoprene or Nitrile Gloves

Respirator: Full-face or half-face respirator with HEPA Cartridges

SECTION 4 - AIR MONITORING AND ACTION LEVELS

4.01 Air Monitoring Equipment to be used

MIE RAM Portable Real-Time Aerosol Monitor with Datalogger

4.02 Air Monitoring Procedures and Action Levels

Type	Frequency	Action Level	Action
Particulates (exclusion zone)	Continuously	0.875 mg/m^3 above background	Employ dust suppression techniques as outlined in the Dust Control Plan
Particulates (breathing zone)	Periodically	8.75 mg/m^3 Total	Don respiratory protection

Note: The action level was derived by taking the highest silver concentration in soil (571 mg/kg) from the 1991 sample events and the OSHA PEL for silver (0.01 mg/m^3), and deriving a concentration in the air comparable to the soil concentrations. The calculated airborne soil concentration is 17.5 mg/m^3. The breathing zone Action Level is conservatively assigned as 1/2 of 17.5 mg/m^3 or 8.75 mg/m^3. To be more conservative for general exclusion zone monitoring, the Action Level has be selected as 1/10 of the Action Level for the breathing zone: 0.875 mg/m^3.

4.03 Potential Confined Space Areas

The excavation does not poses a potential confined space entry area due to its size (2' deep by 12' wide). However, air monitoring for oxygen deficiency, LEL, and organic vapors will be performed should the excavation be greater than 4 feet deep. The SSHC is responsible for complying with Section 10.06 of the Corporate Health & Safety Manual, such as water accumulation, loose rock or soil, and protective systems.

SECTION 5 - EMERGENCY RESPONSE

5.01 Directions to Hospital

Take Route 210 to Route 225 East. Rt. 225 to LaPlata. Turn right on Rt. 301. At second stoplight, turn left on Rt. 6 (East Troll Street). The Hospital is 1/4 mile on right at 701 East Troll Street.

5.02 Location of Nearest Available Telephone

A telephone will be located in the office trailer.

5.03 Emergency Telephone numbers

Indian Head Fire/Ambulance 301-743-3900

Charles County Sheriff 301-743-2222

Physicians Hospital - LaPlata, MD 301-609-4000

OBG Technical Services' Syracuse, NY Office 315-437-6400
Caroline Miller, CIH

OBG Technical Services' Plymouth Meeting, PA Office 215-940-1160
David Schramm
Thomas Wehrle

5.04 Safe Refuge

The on-site trailer will serve as the safe refuge. Company or personnel vehicle will serve as the alternate safe refuge.

Appendix A

Section 4.05 Hazardous Waste Operations

A. Introduction

Due to the nature of the business conducted by OBG Tech, employees may be working on hazardous waste sites. OSHA has requirements for such things as air monitoring, health and safety plans, site control, and emergency response. This section is to define OBG Tech's Standard Operating Procedures (SOPs) for hazardous waste sites and to outline the elements for inclusion in the Site-specific Health and Safety Plan.

B. Other Pertinent Sections of OBG Tech's Health and Safety Manual

Section	Topic
1.01	Safety Policy
2.01	Health and Safety Records
2.02	Health and Safety Training
2.03	Injury/Illness and Accident Report Process
2.04	Medical Surveillance
2.05	Exposure Monitoring
2.09	General Safety Rules
3.01	Medical Services and First Aid
3.02	Sanitation
3.03	Emergency Action
3.04	Confined Space Entry
4.01	Occupational Noise Exposure
4.02	Radiation Exposure
4.03	Airborne Materials Exposure
5	Personal Protective and Life Saving Equipment
6	Fire Protection and Prevention
8	Materials, Handling, Storage, Use, and Disposal

C. Hazardous Waste Standard Operating Procedures

1. Contractors and Sub-contractors

All contractors and sub-contractors retained by OBG Tech for work in hazardous waste will be informed of emergency response procedures and any potential fire, explosion, health, safety, or other hazards of the hazardous waste operation that have been identified by OBG Tech.

2. Program Availability

The written safety and health program will be made available to: any contractor or sub-contractor; OBG Tech employees; OSHA personnel; and to personnel of other Federal, State, or local agencies.

3. Project Personnel

Certain individuals have specifically designated responsibilities on hazardous waste sites.

Project Manager - The Project Manager is responsible for the over-all management of the project. The Project Manager manages administrative requirements.

Project Supervisor - The Project Supervisor is responsible for coordinating between office and field personnel. The Project Supervisor is responsible for the day-to-day activities of the project. The Project Supervisor will oversee field and related activities.

Site Safety and Health Coordinator - The Site Safety and Health Coordinator (SSHC) will establish operating standards and coordinate overall project safety and health activities for the site. The SSHC will review project plans and revisions to plans to determine that safety and health procedures are maintained throughout the project. The specific responsibilities of the SSHO are outlined in Part 16, below.

4. Pre-entry Briefing

Pre-entry briefings will be held prior to initiating any site activity and at other times as necessary to inform employees of the site-specific health and safety plan. In situations covered by OBG Tech's Haz Com Program or the 40-hour Hazardous Waste Operations Health and Safety Training, training required by that program need not be duplicated.

5. Effectiveness of site-specific health and safety plan

Inspections will be made by the Site Health and Safety Coordinator or the Project Supervisor to determine the effectiveness of the site safety and health plan.

6. Personal Protective Equipment

Personal protective equipment (PPE) will be provided in accordance with Section 5 of this Health and Safety Manual. PPE will be selected and used which will provide protection against known or suspected hazardous substances and health hazards.

7. Initial Site Entry Monitoring

When information on the site shows that the potential for ionizing radiation, for IDLH conditions, or when site information is not sufficient to reasonably eliminate the following conditions:

a. Monitoring with direct-reading instruments for hazardous levels of ionizing radiation (See Section 4.02).
b. Monitoring the air with direct-reading instruments for IDLH conditions (See Section 4.03).
c. Visually observing for signs of actual of potential IDLH or other dangerous conditions.

8. On-going Air Monitoring Program

An on-going monitoring program will be established for every site where there is a potential for employee exposure to hazardous concentrations of hazardous substances. This on-going monitoring is to evaluate proper selection engineering controls, work practices, and PPE, so that employees are not exposed above OSHA PELs and published exposure levels. Specifically the on-going monitoring will be conducted:

- when work begins on a different part of the site;
- when contaminants other than those previously identified are being handled;
- when a different type of operation is initiated;
- when employees are handling leaking drums or containers or working in areas with obvious liquid contamination (e.g. spill or lagoon)

Personal monitoring will be performed on those employees likely to have the highest exposures to airborne materials in accordance with Section 4.03 of this Health and Safety Manual.

9. Site Control

The elements of the site control program will include a site map; site work zones; site communications, including alerting means for emergencies; and identification of nearest medical assistance. OSHA also requires the use of the "buddy" system, which is defined below and standard operating procedures, which are encompassed into this Health and Safety Manual. These need not be repeated in the site-specific health and safety plan when this Health and Safety Manual is on-site.

a. Site Work Zones

- *Exclusion Zone*: The exclusion zone or the Hot Zone is the area where contamination does or could occur. The exclusion zone boundary should be clearly marked by lines, placards, hazard tape and/or signs or enclosed by physical barriers, such as chains, fences, or ropes. Access control points should be established at the periphery of the exclusion zone to regulate the flow of personal and equipment into an out of the zone and to help verify that proper procedures for entering and exiting are followed.

The required level of PPE in the exclusion zone can vary according to job assignment. This will allow a flexible, effective, and less costly operation, while still maintaining a high degree of safety.

- *Contamination Reduction Zone*: The contamination reduction zone or the decontamination zone is the transition area between the contaminated area and the clean area. At least two lines of decontamination stations should be set

up within the contamination reduction zone: one for personnel and one for heavy equipment. Personnel entering the contamination reduction zone should be required to wear PPE prescribed for working in the contamination reduction zone. To reenter the support zone, workers must remove any PPE. Personnel stationed in the contamination reduction zone includes the Site Health and Safety Coordinator, the Project Supervisor, personnel assisting in decontamination procedures, and emergency response personnel.

The contamination reduction zone should be designed to facilitate: decontamination, emergency response, equipment resupply, sample packaging, and temporary work rest area.

- *Support Zone*: The support zone is the location of the administrative and other support functions needed to keep the operations in the exclusion and contamination reduction zone running smoothly. Any function that need not or cannot be performed in a hazardous atmosphere is performed here. Personnel may wear normal work clothes within this zone. Any potentially contaminated clothing, equipment and samples must remain in the contamination reduction zone until decontaminated. All emergency telephone numbers, change for the telephone (if necessary), evacuation route maps, and vehicle keys should be kept in the support zone.

b. "Buddy" System

Most activities in a contaminated or otherwise hazardous areas should be conducted with a buddy who is able to:

- Provide his or her partner with assistance.
- Observe his or her partner for signs of chemical or heat exposure.
- Periodically check the integrity of his or her partner's protective clothing.
- Notify the Project Supervisor or the Site Health and Safety Coordinator if emergency help is needed.

c. Site Communication

Internal communication among personnel on site and external communication between on site and off site personnel should be established.

Verbal communication at a site can be impeded by on-site background noise and the use of personal protective equipment. In the absence of site-specific communication signals, the following will be used for emergencies:

Hand clutching throat: Out of air/can't breathe

Thumbs up: OK/I'm alright/I understand

Grip partner's wrist or both hands around partner's waist: Leave area immediately

10. Site Security

Site security is necessary to prevent the exposure of unauthorized, unprotected people to the site, to avoid the increased hazards of vandals, to prevent theft, and to avoid interference with safe working procedures.

The Site-specific health and safety plan will include provisions for maintaining security at the Site.

11. Engineering Controls, work practices, and personal protective equipment for employee protection

Engineering controls and work practices must be first instituted to reduce and maintain employee exposure to or below the OSHA PELs, except to the extent that such controls and work practices are not feasible.

Engineering controls which may be feasible include the use of remotely operated material handling equipment. Work practices which may be feasible include wetting down dusty operations and locating employees upwind of possible hazards.

Whenever engineering controls and work practices are not feasible, PPE will be used in accordance with Section 5 of this Health and Safety Manual to reduce employee exposure to or below the OSHA PELs.

Engineering controls, work practices, and personal protective equipment will be used to reduce and maintain employee exposure to or below published exposure levels not regulated by OSHA. PPE will be used in accordance with Section 5 of this Health and Safety Manual to reduce employee exposure to or below the published exposure levels.

Guidance for PPE selection can be obtained from 29 CFR 1910.120 Appendix B or the NIOSH/OSHA/USCG/EPA document "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities." The guidance document is usually handed out in the OSHA 40-hour course. However, should an employee desire a copy of 29 CFR 1910.120 Appendix B or the guidance document, the safety coordinator can provide one.

12. Levels of Protection

OBG Tech often employs the use of PPE based upon the EPA Levels of Protection. They are listed in Section 5 as a starting point, however site-specific PPE may be required. Site-specific PPE will be addressed in the site-specific health and safety plan. The type of equipment used and the overall level of protection should be re-evaluated periodically as the amount of information about the site increases and as workers as required to perform different tasks.

13. PPE Decontamination Procedures

General PPE decontamination procedures are outlined in Section 5.01. Site-specific decontamination procedures, if any, will be included in the Site-specific Health and Safety Plan.

14. Emergency Response Procedures

The nature of hazardous waste work makes emergencies a continuous potential, no matter how infrequently they occur. The communications network, as outlined in Section 4.05, part 8.c, must be conveyed to all workers so that emergency information may quickly distributed. Equipment will be necessary for emergency situations. At a minimum each site will be equipped with a fire extinguisher, eye wash bottle, and first aid kit. Other equipment, which should be considered on a project by project basis, are emergency showers, safety harnesses, and spill-containment equipment.

Follow-up procedures, as follows, must be implemented before activities resume on-site:

- Appropriate governmental agencies must be notified as required.
- Restock, replace, and/or clean all equipment and supplies.
- The Site Health and Safety Coordinator, the Project Supervisor, and the employee affected should fill out an accident report, as outlined in Section 2.03.

15. Hazards of hazardous waste sites

Chemical

Most sites contain a variety of chemicals that may be in a gaseous, liquid, or solid form. These substances can be hazardous through inhalation, skin absorption, ingestion, or through injection (a puncture wound).

Acute chemical exposures usually occur during or shortly after exposure to a high concentration of a chemical. *Chronic* usually refers to exposures to low concentrations of a chemical over a long period of time. Both of these are dependant on the chemical and may be temporary or reversible or may be permanent. Some chemicals may exhibit warning signs, while other chemicals are odorless, colorless, and tasteless.

Inhalation is the primary route of exposure at a hazardous waste site. Therefore the selection and use of the proper respiratory protection is extremely important where there is a potential for inhalation of hazardous materials. Direct skin and eyes contact is also a potential route of exposure, therefore proper selection and use of PPE is extremely important. Ingestion and injection are the least significant routes of exposure at a hazardous waste site. However, personal habits such as eating, drinking, or smoking, and safety hazards such as puncture wounds can be potential routes, therefore following SOPs and use of PPE can reduce the hazards from both of these routes of exposure.

Further information is presented in OBG Tech's Haz Com and OSHA 40-hour hazardous waste operations health and safety training.

Explosion and Fire

Due to the nature of activities at hazardous waste sites, there is a potential for explosions and fires. To minimize the hazards from fire and explosion: monitor for explosive and flammable atmospheres following the procedures in Section 3.04; keep all potential ignition sources away from an explosive or flammable environment; use non-sparking, explosion-proof equipment; and follow safe work practices.

Oxygen Deficiency

Oxygen deficiency may result from the displacement of oxygen by another gas, or the consumption of oxygen by another chemical reaction. Confined spaces and low-lying areas are particularly vulnerable and should always be monitored prior to entry following the procedures in Section 3.04.

Ionizing Radiation

Monitoring for ionization radiation is required to be performed when there is not sufficient information to eliminate the possibility of it being present on-site (e.g. uncontrolled hazardous waste sites, where little or no information is available on past history). The procedure in Section 4.02 will be followed for monitoring.

Biological Hazards

Wastes from hospitals and research facilities may contain biological materials that may cause infections to site personnel. Other biological hazards that may be present at hazardous waste sites include poisonous plants, insects, and animals. PPE can reduce the potential for exposure. The Safety Coordinator can assist in determining the correct PPE for the hazard present.

Safety Hazards

Hazardous waste sites contain numerous potential safety hazards such as: holes, ditches, drums, boards, nails, broken glass, slippery surfaces, steep grades, and uneven terrains. The work itself may be a potential safety hazard. Site personnel should constantly look out for potential safety hazards and should immediately inform the Project Supervisor or the Site Health and Safety Coordinator of any new hazards.

Electrical Hazards

As in all construction work, overhead power lines, electrical wires and cables, site electrical equipment, and lightning also pose a potential hazard to site workers. Section 10.02 provides guidance on safe electrical practices.

Heat Stress

Heat stress is potentially a major hazard for workers wearing protective clothing. Due to the impervious nature of the PPE to keep chemicals away from the skin, body heat and moisture are trapped within the PPE. Careful training and frequent monitoring of personal who wear protective clothing, scheduling of work and rest periods, and the frequent replacement of fluids can protect against this hazard.

Heat stress can be minimized by taking the following steps:

- Adjusting work schedules
- Provided air conditioned or shaded rest areas
- A total of 1 to 1.6 gallons of fluid intake recommended, but more may be necessary to maintain body weight
- Acclimatize workers to site work conditions
- Provide cooling devices to aid natural body heat exchange during prolonged work or severe heat exposure
- Review recognition and treatment of heat stress with workers

For workers wearing semi-permeable or impermeable PPE and when the temperature in the work area is above 70°F, measure:

- Heart Rate: count the radial pulse during a 30-second period as early as possible in the rest period.

  If heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the work cycle by one-third and keep the rest period the same.

  If the heart rate exceeds 110 beats per minute at the next rest period, shorten the following work cycle by one-third.

- Oral Temperature: use a clinical thermometer or similar device to measure the oral temperature at the end of the work period (before intake of fluids).

  If the oral temperature exceeds 99.6°F, shorten the next work cycle by one-third without changing the rest period.

  If the oral temperature still exceeds 99.6°F at the beginning of the next rest cycle, shorten the following work cycle by one-third.

- Body Water Loss, if possible: measure weight on a scale accurate to +/- 0.25 lb at the beginning and end of each work day to see if enough fluids are being taken to prevent dehydration. Weights should taken while the employee is wearing similar clothing each day. The body water loss should not exceed 1.5 percent total body weight loss in a work day.

The frequency of physiological monitoring depends on the air temperature adjusted for solar radiation and the level of physical work. The suggested frequency of physiological monitoring for fit and acclimatized workers.

Adjusted Temp.	Normal Work Ensemble	Impermeable Ensemble
90°F and above	45 minutes	15 minutes
87.5°F to 90°F	60 minute	30 minutes
82.5°F to 87.5°F	90 minutes	60 minutes
77.5°F to 82.5°F	120 minutes	90 minutes
72.5°F to 77.5°F	150 minutes	120 minutes

Cold Exposure

Cold stress and impaired ability to work are dangers at low temperatures and when the wind-chill factor is low. To guard against cold stress: wear appropriate clothing; have warm clothing and warm shelter readily available; and carefully monitor workers' physical conditions.

Noise

Work around large equipment often creates excess noise. The procedures set forth in Section 4.01 for occupation noise exposure and Section 5.03 for hearing protection should be followed.

16. Responsibilities of Site Health and Safety Coordinator

The Site Health and Safety Coordinator advises the Project Manager and the Project Supervisor on the matters of health and safety on the site. Specifically the responsibilities of the Site Health and Safety Coordinator include:

a. Aiding the selection of protective clothing and equipment.
b. Periodically inspecting protective clothing and equipment.
c. Maintaining proper storage of protective clothing and equipment.
d. Monitors the workers for signs of heat stress, cold stress, and fatigue.
e. Monitors on-site hazards and conditions.
f. Conducts periodic surveillance to evaluate effectiveness of Site-specific Health and Safety Plan.
g. Has knowledge of emergency procedures, evacuation routes, and the telephone numbers of the ambulance, local hospital, poison control center, fire department, and police department.
h. Posts the directions to the hospital and the telephone numbers of the ambulance, local hospital, poison control center, fire department, and police department.

i. Notifies, when necessary, local public emergency officials.
j. Coordinates emergency medical care.

17. Safe Work Practices

a. No eating, smoking, eating, drinking, or application of cosmetics in the Contamination Reduction Zone or the Exclusion Zone.
b. No matches or lighters in the Contamination Reduction Zone or the Exclusion Zone.
c. Enter and exit following procedures in the Site-specific Health and Safety Plan.
d. Wear the PPE specified in the site-specific Health and Safety Plan in the Exclusion Zone.
e. Use the "buddy" system.
f. Report any unusual conditions to the Project Supervisor or the Site Health and Safety Coordinator immediately.

D. Requirements for Site-Specific Health and Safety Plans

As a company policy, site-specific health and safety plans are required on projects. The following site-specific information must be included in the health and safety plan, as well as this manual attached as an appendix. The Safety Coordinator will prepare and/or review each site-specific health and safety plan.

1. Organizational structure of site program

The following information, at a minimum, will be included in the site-specific health and safety plan:

- Project Manager's name and telephone number
- Project Supervisor's name and telephone number
- Site Safety and Health Coordinator's name and telephone number
- Other personnel needed for emergency response

This organizational structure will be reviewed and updated as necessary to reflect the current status of the hazardous waste site operations.

2. Workplan Summary

A summary of the workplan, including location and approximate size of the site, will be included in the site-specific health and safety plan addressing the anticipated activities.

3. Safety and Health Hazard Analysis

A safety and health hazard analysis will be prepared for the site-specific health and safety plan, including pathways for hazardous substance dispersion. The safety and health hazard analysis will include hazardous substances and health hazards involved or expected at the site, and their chemical and physical properties.

Information to consider to include in the site-specific health and safety plan:

- Exposures exceeding the permissible exposure limits and published exposure levels
- IDLH situations
- Potential skin absorption and irritation sources
- Potential eye irritation sources
- Explosion sensitivity and flammability ranges
- Oxygen deficiency

4. Site-specific Training Assignments

Initial 40-hour worker, Supervisor, and Refresher training are addressed in Section 2.02, Health and Safety Training. Hazard Communication training is also addressed in this section. Training specific to the site will be addressed in the site-specific health and safety plan.

5. Personal Protective Equipment

Personal protective equipment to be used by employees for each of the site tasks and operations being conducted will be addressed in the site-specific health and safety plan. The following information will be included in the site-specific plan: PPE selection based upon site hazards; work mission duration; site-specific information on PPE decontamination and disposal;

6. Frequency and types of air monitoring

Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used will be addressed in the site-specific health and safety plan. Methods of maintenance and calibration of monitoring equipment can be found in Section 4.03.

7. Site Control Program

The site-specific site control program will include a site map and the identification of the nearest medical assistance.

9. Site Security

Site-specific information for maintaining security will be included in the site-specific health and safety plan.

8. Emergency Response Plan

Site-specific information such as safe distances and places of refuge, evacuation routes and procedures, and procedures for reporting incidents to local, state, and federal agencies not covered in OBG Tech's SOPs will be covered in the site-specific health and safety plan. The nearest telephone for emergency communication will be identified in the site-specific emergency response plan.

9. Spill Containment Program

A spill containment program unique to the site will be developed for the site-specific health and safety plan, if applicable.

10. Site-specific information other than in SOPs

a. Medical surveillance requirements unique to the site, other than what is covered in OBG Tech's SOP in Section 2.04.
b. Employee training assignments unique to the site other than what is covered in OBG Tech's SOP in Section 2.02.
c. Decontamination procedures which are unique to the site other than what is covered in OBG Tech's SOP in Section 4.04 (E).
d. Safe work practices unique to the site, other than what is covered in OBG Tech's SOP in above.

Appendix B

Section 5.01 EPA Levels of Personal Protective Equipment

A. Introduction

Due to the nature of the business of OBG Tech, employees may be required to work on hazardous waste sites. Use of personal protective equipment (PPE) is required by OSHA. EPA has defined four Levels of Protection: Levels A, B, C, and D. These levels are defined below and may be used as a starting point for PPE on sites, but must be tailored to the specific situation.

B. Levels of Personal Protection

Level A

Level A protection provides the highest available level of respiratory, skin and eye protection. The material in the suit, gloves, and boots must be compatible with the substances involved.

1. Positive pressure, full-facepiece SCBA or positive pressure supplied-air respirator with escape SCBA, approved by the National Institute for Occupational Safety and Health (NIOSH).
2. Fully-encapsulating, chemical-resistant suit.
3. Outer chemical-resistant gloves.
4. Inner chemical-resistant gloves.
5. Chemical-resistant safety boots.
6. Two-way communications.

Options:

1. Cooling unit.
2. Coveralls.
3. Long-underwear.
4. Other PPE as required in Section 5.02 through 5.09 of this Health and Safety Manual.

Level B

Level B protection provides the highest level of respiratory protection but less skin protection than Level A. Use only when airborne chemicals are not hazardous to the skin or not capable of being absorbed through the intact skin.

1. Positive-pressure, full-facepiece SCBA or positive-pressure supplied-air respirator

with escape SCBA (NIOSH approved).

2. Chemical-resistant suit.

3. Inner and outer chemical-resistant gloves.

4. Chemical-resistant safety boots.

5. Two-way communications.

Options:

1. Cooling unit.

2. Coveralls.

3. Long-underwear.

4. Other PPE as required in Section 5.02 through 5.09 of this Health and Safety Manual.

Level C

Level C protection provides less skin protection as Level A and a lower level of respiratory protection than Levels A and B.

1. Full-facepiece, air-purifying, canister-equipped respirator (NIOSH approved).

2. Chemical-resistant suit.

3. Inner and outer chemical-resistant gloves.

4. Chemical-resistant safety boots or chemical-resistant boot covers.

5. Two-way communications.

Options:

1. Cooling unit.

2. Coveralls.

3. Long underwear.

4. Other PPE as required in Sections 5.02 through 5.09 of this Health and Safety Manual.

Level D

Level D protection provides minimal skin protection and no respiratory protection.

1. Coveralls or long pants and long-sleeved shirt.

2. Safety boots.

   Options:

   1. Other PPE as required in Sections 5.02 through 5.09 of this Health and Safety Manual.

C. PPE donning procedures

1. Inspect the PPE before donning with the procedures outlined in Sections 5.02 through 5.09.
2. Make adjustments to hard hat to fit user's head, if necessary.
3. Standing or sitting, step into legs of the suit; evaluate proper placement of feet within the suit; then gather suit and pull sleeves over arms and secure suit front.
4. Put on chemical-resistant safety boots over the feet of the suit. Tape the leg cuff over the tops of the boots.
5. Put on air tanks and harness assembly of the SCBA (if applicable). Don the facepiece or respirator and adjust it to be secure, but comfortable. Do *not* connect the breathing hose of the SCBA. Open valve on the air tank (if applicable).
6. Perform negative and positive respirator facepiece seal test procedures.
7. Put on inner gloves.
8. Put on other PPE (e.g hard hat, hearing protectors).
9. Raise hood over head carefully so that the face seal of the respirator is not disrupted.
10. Connect the breathing hose while opening the main valve (if applicable).
11. Have assistant observe the wearer for a period of time to evaluate whether the wearer is comfortable, stable, and that the PPE is functioning properly.

D. PPE Decontamination Procedures

Station 1: Equipment Drop

Deposit equipment used on-site (tools, sampling devices, clipboards, etc) onto plastic drop cloths. During hot weather a cool down station may be set up within this area.

Station 2: Outer Garment, Boots, and Gloves Wash and Rinse

Scrub outer boots, outer gloves and chemical-resistant splash suit with decontamination solution or detergent water. Rinse off using large amounts of water.

Station 3: Outer Boot and Glove Removal

Remove outer boots and gloves. Deposit in appropriate area.

Station 4: Tank, Canister, or Mask Change

If worker leaves exclusion zone to change air tank, canister, filters, or mask, this is the last step in the decontamination procedure. Worker's air tank, canister, filters, or mask is exchanged, new outer gloves and boots are donned, joints taped, and worker returns to duty.

Station 5: Boot, Gloves, and Outer Garment Removal

Boots, chemical-resistant splash suit, inner gloves removed and deposited in separate containers lined with plastic.

Station 6: SCBA or Face-piece Removal

SCBA backpack and/or facepiece is removed. Avoid touching face with finger. SCBA deposited on plastic sheets.

Station 7: Field Wash

Hands and face are thoroughly washed. Shower if appropriate.

E. Upgrading/Downgrading of PPE Levels

The PPE used and the overall level of protection should be reevaluated periodically as the amount of information on the site increases, and as workers as required to perform different tasks.

Reasons to upgrade the level of PPE may include:

- Known or suspected presence of skin contact hazards.
- Occurance or likely occurance of gas or vapor emission.
- Change in work task that will increase contact or potential contact with hazardous materials.

Appendix C

Section 4.03 Airborne Materials Exposure

A. Introduction

OSHA, in 29 CFR 1910.1000, specifies that an employee's exposure to substances listed in Table Z-1-A, Z-2, or Z-3 shall be limited in accordance with the requirements of the section. OSHA, in 29 CFR 1926.55, specifies that an employee's exposure to those specified in the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) for Airborne Contaminants for 1970 shall be avoided. Where the requirements of the two standards overlap, the most stringent of the two will be enforced.

B. Administrative and Engineering Controls

To achieve compliance with airborne materials exposure, administrative or engineering controls must first be implemented to achieve compliance.

C. Respirator Use

When effective engineering or administrative controls are not feasible to control airborne exposures, or while they are being instituted, appropriate respirators will be used. Training, selection, issuance, and standard operating procedures are outlined in Section 5.05 of this Health and Safety Manual.

D. Action Specific Hazards

As specified in 29 CFR 1910 Subpart Z, action specific hazards, i.e. lead, asbestos, and formaldehyde, have certain requirements. Any such material will be monitored as directed under specific regulatory requirements.

E. Monitoring

1. Monitoring for IDLH and other dangerous conditions

During confined space entry and other situations where the quality of the air is unknown, air monitoring will be conducted for combustible or oxygen deficient atmospheres, as well as for volatile organic. Calibration and maintenance procedures for direct-reading equipment are included as Appendix A.

2. General On-site Monitoring

Site conditions may change during site activities. Air monitoring will be conducted when:

a. Work begins on a different portion of the site.
b. A different type of operation is initiated.
c. Employees are working in obvious contamination.

3. Personal Monitoring

Personal monitoring will be performed on high-risk workers who are closest to the source of contaminant generation. This approach is based upon the rationale that the probability of significant exposure varies directly with distance from the source. If workers who are closest to the source are not significantly exposed, then all other workers are, presumably, also not significantly exposed and probably do not need to be monitored.

However, any employee may request personal monitoring be performed if a potential risk exists.

Personal air monitoring methodology will be determined by the Safety Coordinator using the appropriate National Institute for Occupational Safety and Health (NIOSH) or other appropriate methods.

F. Notification

Employees will be notified of the results of the monitoring performed in accordance with the procedures specified in Section 2.05.

Appendix A

Calibration and Maintenance Procedures

A. Loan of Equipment

1. Sign-out Procedures

The health and safety monitoring equipment can be obtained from the Warehouse Supervisor or the Safety Coordinator. The information that will be required prior to a piece of equipment leaving the warhouse equipment room will be:

- Serial Number of equipment
- Name of Person responsible for equipment
- Job Number and Location
- Expected Return Date

2. Equipment Return

Never use carrying cases as shipping cases.

Should a piece of equipment be damaged or in need of maintenance, it should be tagged with appropriate instructions.

Upon return, the piece of equipment will be checked to see if it is in the same condition as it left in. If it is broken, an assessment will be made to determine whether it was broken by mishandling or by normal wear and tear. It will also be determined whether the repair can be performed in-house or must be sent to the manufacturer. If the equipment was determined to be broken due to mishandling and the equipment must be sent to the manufacturer, the Project Manager in charge will be contacted to determine if the project can absorb the cost of the repair.

B. Photoionization Detectors

1. Calibration Procedures

This is to be performed, at a minimum, on a daily basis or whenever the detector is used.

a. Turn on photoionization detector (PID) and allow to warm up.

b. Zero instrument in "clean" air. (Note: "Clean" air refers to upwind of a waste site).

c. Connect Span Gas cylinder to PID with a piece of clean tubing.

d. Open the valve on the cylinder until a steady reading is obtained.

e. Adjust the SPAN control, if necessary, until reading is the same as the Span Gas concentration.

f. Close the valve on the Span Gas cylinder. Disconnect the cylinder from the PID.

g. Sample again in "clean" air. Adjust the zero, if necessary.

2. Maintenance Procedures

Keeping the PID in top operating shape means charging the battery, cleaning the lamp window, and replacing filters. The exterior of the PID can be wiped clean with a damp cloth and mild detergent, if necessary.

B. Combustible Gas and Oxygen Meters

1. Calibration Procedures

a. Combustible Gas Meter

i. Turn on the instrument and allow to warm up.
ii. Zero % LEL meter in "clean" air.
iii. Connect calibration gas with clean piece of tubing to meter.
iv. Open the valve on the cylinder until a steady reading is obtained.
v. Adjust the combustible gas calibration control, if necessary, until reading is the same as the calibration gas concentration.
vi. Close the valve on the calibration gas cylinder. Disconnect the cylinder from the meter.
vii. Sample again in "clean" air. Adjust the zero, if necessary.

b. Oxygen Meter

i. Turn on the instrument in "clean" air and allow to warm up.
ii. If the % oxygen stabilizes at a value other than 20.8%, adjust the oxygen calibration ccontrol until the reading is 20.8%.

2. Maintenance Procedures

Keeping the meter in top operating shape means charging the battery and replacing worn parts. The exterior of the meter can be wiped clean with a damp cloth and mild detergent, if necessary.

Appendix D

3.05 Confined Spaces

A. Introduction

OSHA has proposed a standard, 29 CFR 1910.146, for permit required confined spaces. The proposed standard includes provisions for testing and entering confined spaces. The employee who enters a confined space may be subject to multiple hazards. The purpose of this section is to outline procedures to reduce these hazards.

B. Definition of Confined Space

OSHA has defined a "permit required confined space" as an enclosed space which:

1. Is large enough and so configured that an employee can bodily enter and perform the assigned work.

2. Has limited or restricted means for entry or exit.

3. Is not designed for continuous employee occupancy.

4. Has one or more of the following characteristics:

   a. Contains or has a known potential to contain a hazardous atmosphere.
   b. Contains a material with the potential for engulfment of an entrant.
   c. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls, or a floor which slopes downward and tapers to a smaller cross-section, or
   d. Contains any other serious safety or health hazard.

C. Confined Space Entry Program

1. Preparations

   a. Follow lock-out/tag-out procedures as necessary.
   b. Ventilation will be provided if necessary.
   c. Test for oxygen content, explosive mixture, and toxic concentrations from the outside of the confined space.
   d. When a ladder is required to enter the confined space, the ladder must be tied securely and must not be removed while anyone is in the confined space.
   e. Adequate lighting of an approved safety type must be provided.
   f. All necessary safety equipment to be used by the person entering the confined space as well as for the safety watch will be checked.
   g. Emergency procedures will be reviewed.
   h. The confined space entry permit will be filled out by the Project Supervisor or Project Foreman.

i. Signs and barriers will be posted as necessary to prevent unauthorized entry to the confined space and other external hazards.
j. Smoking is prohibited inside of and within twenty feet of the confined space.
k. Spark proof hand tools and explosion proof equipment will be used.
l. If welding is to be performed in the confined space that previously or now contain combustibles, all residues, including dry scale or sediment must be removed. If it is not possible to remove all combustible materials, they must be covered with a non-combustible blanket.
m. At least one 20 lb. ABC multi-purpose fire extinguisher must be available for instant use in a confined space containing flammable gases or vapors.
n. Each person involved shall be trained on the hazards, how to recognize the hazards, and how to protect themselves from the hazards. Additionally, the attendants will be training on the use of rescue equipment and other duties outlined below.

2. Attendants

a. Initial entry will be accomplished with an attendant stationed outside for the purpose of immediate assistance.
b. The designated attendant will never enter into the permit space for the purpose of an attempt to rescue the entrants.
c. Attendants will use any rescue equipment provided for their use and perform other rescue and emergency duties, without entering the permit space.
d. The attendant will be responsible for maintaining an accurate count of all persons in the space.
e. Communication between attendants and entrants will be maintained continuously during entry.
f. Attendants will order authorized entrants to evacuate a space immediately when:

i. The attendant observes a condition which is not allowed in the entry permit.
ii. The attendant detects behavioral effects hazard exposure.
iii. The attendant detects a situation outside the space which could endanger entrants.
iv. The attendant detects an uncontrolled situation within the permit space.
v. The attendant is monitoring entry in more than one permit space and must focus attention on the rescue of entrants from one of those spaces.
vi. The attendant must leave the work station.

g. Attendants will summon rescue and other emergency services as soon as the attendant determines that the authorized entrants need to escape from the confined space hazards.
h. Attendants will warn unauthorized persons away from the space, request that unauthorized persons exit immediately if they have entered the space, and inform authorized entrants if unauthorized persons have entered the space.

3. Supervisor/Foreman

Employees of OBG Tech authorizing or in charge of entry will:

a. Determine that the entry permit is properly filled out.
b. Determine that the entrants and attendants are properly trained.
c. Determine that necessary procedures, practices and equipment for safe entry are in place.
d. Periodically monitor to determine that confined space operations remain consistent with the terms of the entry permit and that acceptable entry conditions are present.
e. Cancel authorization and terminate entry whenever entry conditions are not present.
f. Take the necessary measures for concluding an entry operation, such as closing off a permit space and cancelling the permit, once the authorized work has been completed.
g. The supervisor/foreman in charge of authorizing the confined space entry may also be an entrant or an attendant.

4. Rescue team

Arrangements must be made prior to entry under which a rescue team will respond to a request for rescue activities. The outside rescue team will be informed of the hazards they may confront when called to the rescue.

D. Contractor Responsibilities

A permit space which is under the control of another employer will provide all available information on the permit space in which the contractor needs to be aware.

E. Records

Permits will be filed with other pertinent project health and safety information.

OBG TECHNICAL SERVICES, INC.

CONFINED SPACE ENTRY PERMIT

Job Location:	Contract Number:
Location of Confined Space:	Period Covered by Permit:
Purpose of Entry:	
Authorized Person	
Attendant(s)	
Entrant(s)	
Monitoring Equipment	
Rescue Procedures	
Communication Procedures	

SPECIAL REQUIREMENTS	YES	NO		YES	NO
Lock-out - De-energize			Escape Harness		
Lines Broken - Capped or Blanked			Tripod emergency escape unit		
Purge - Vent and Flush			Lifelines		
Ventilation			Fire Extinguishers		
Secure Area			Lighting		
Breathing Apparatus			Protective Clothing		
Resuscitator - Inhalator			Respirator		

TESTS TO BE TAKEN	PEL	YES	NO	RESULTS
% Oxygen	19.5% to 22%			
% LEL	10%			
Carbon Monoxide	35 ppm			
Aromatic Hydrocarbons	5 ppm			
Hydrogen Sulfide	10 ppm			
Sulfur Dioxide	5 ppm			
Ammonia	25 ppm			

Notes:

Appendix E

5.06 Respiratory Protection

A. Introduction

OSHA, in 29 CFR 1910.134, specifies that "when effective engineering controls are not feasible, or while they are being instituted, appropriate respirators will be used." OSHA references exposure to air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors.

Due to the nature of the business conducted by the company, respiratory protection may be necessary for specific activities performed by our employees. This section will serve as the respiratory protection program and is adopted by the company in an effort to assist ensuring a safer working environment for our employees during work activities requiring respiratory protection as dictated in the site-specific Health and Safety Plan. In order to comply with regulatory requirements, this program is developed pursuant to 29 CFR 1910.134 and 29 CFR 1926.103. This program and use of respirators are instituted according to the site-specific Health and Safety Plan and only after exhausting all feasible engineering controls.

B. Employer and Employee Responsibility

1. Employer Responsibilities

The Safety Coordinator will see that approved respirators, cartridges, and spare parts will be provided by the company. The Safety Coordinator will also be responsible for the establishment and maintenance of this respiratory protection program and the upkeep of records for fit testing, medical surveillance, and training.

2. Employee Responsibilities

It is the responsibility of the employee to use the respiratory protection in accordance with instructions and training received. The employee will maintain the respirator to insure that cartridges and parts are replaced when necessary. The employee will report any problems with his respirator to his supervisor or the Safety Coordinator.

C. Training of Employees

All employees required to wear respirators on the job will be trained prior to the use of respirators. That training will cover the topics required by 29 CFR 1910.120 (Hazardous waste operations and emergency response) and 29 CFR 1910.134 (Respiratory Protection), and include the following:

- basics of respiration
- basics of respiratory hazards
- capabilities and limitations of respirators
- inspection of respirators
- how a respirator should be worn
- cleaning and disinfecting respirators
- storage of respirators
- respirator-specific training
- fit-checking procedures

All employees will be given the opportunity to wear their respirator in an uncontaminated atmosphere and a test atmosphere for a period of time to become familiar with the use of respirators.

All training is documented and is filed in the Syracuse office.

D. Physician's Approval

All employees required to wear a respirator will have a physician's written approval to wear a respirator prior to being required to wear one. The respirator user's medical status will be reviewed annually.

The local physician will determine which health and physical conditions are pertinent. A description of the respiratory hazards, specifics of employee's job functions while wearing a respiratory and copies of all applicable regulations will be provided to the physicians to further aid the decision process.

The physical will be provided at no cost to the employee. A copy of the written report will be made to the employee upon request.

All medical examinations are recorded and are filed in the Syracuse office.

E. Selection of Respirators

Respirators will be selected on the basis of the following:

- chemical and physical hazards
- characteristics of the hazardous operation of process
- face piece to face fit
- comfort
- utilization of NIOSH recommendations
- utilization of manufacturer's recommendations
- the guidance of American National Standard Practices for Protection Z88.2-1969.

All respirators selected will be NIOSH/MSHA approved for the hazards encountered.

The Safety Coordinator will be adequately instructed to insure that the correct respirator is selected and that the appropriate personal modifications are made such as corrective lens for full-face masks.

F. Issuance of Respirators

The Warehouse Supervisor will be responsible for the issuance of a properly selected respirator to each employee. Each employee will be given his own respirator and will be responsible for bringing it to the jobsite. Employees should mark his respirator so that it will not be confused with others.

G. Fit-Testing of Respirators

To insure a proper fit of negative pressure respirators, respirator fit-testing will be performed. Where fit-testing is not required by specific hazard regulation, as it is with lead or asbestos, the qualitative irritant vapor or smoke protocol of the asbestos standard will be adopted (29 CFR 1910.1001, Appendix C). Fit-testing will be performed to select respirators and be performed at the discretion of the Safety Coordinator thereafter unless required by law to be performed more often or unless there is sufficient need to do so (i.e., denture replacement, scarring of face, weight change).

Fit-test failure will result in selection of a different size respirator. Continued test failure will result in selection of a different manufacturer's respirator.

All fit-testing information such as the employee, the date, and the type of respirator is recorded and filed in the Syracuse office.

H. Inspection of Respirators

Respirators will be inspected for damage before and after each use. Each employee, after training, will responsible for inspection. The following areas will be inspected:

- tightness of connections
- face piece
- headbands
- inhalation valve
- exhalation valve
- cartridge or filter fittings
- pliability of rubber or elastomer parts
- signs of deterioration

Any malformation, distortion, missing parts, cracks, etc. will be sufficient to issue replacement parts or if necessary, a new respirator.

I. Standard Operating Procedures

Before entering any potentially contaminated environment, each employee will:

1. Carefully inspect the respirator following the procedures specified in Section 8.

2. Duct tape should be removed from cartridges (if applicable).

3. The respirator should be donned and checked for a proper fit using the following tests:

   a. Positive Pressure Test - close off the exhalation valve with your hand. Breathe into the mask. The face-to-facepiece seal is satisfactory if some pressure can be built up inside the mask and sustained.

b. Negative Pressure Test - close off the inlet openings of the cartridge with the palm of your hand. Inhale gently so that a vacuum occurs inside the mask. Hold your breath for 10 seconds. If the vacuum is sustained, and no inward leakage is detected, the respirator fits properly.

4. Inside the contaminated environment, respirators will not be removed except in a medical emergency such as a suspected heart attack.

5. Respirators will be worn with straps inside the disposable garment allowing a worker to maintain respiratory protection while removing contaminated garments.

J. Cleaning and Disinfecting of Respirators

Respirators will be cleaned after each use. Manufacturers may have specific recommendations for cleaning and those should be followed. In absence of manufacturers recommendations, the following procedures should be used:

1. Remove the cartridges and headbands

2. Disassemble all respirator parts

3. Wash all respirator parts (except cartridges and headbands) in a cleaner - disinfectant solution or use soap and hot water

4. Rinse completely in clean, warm water

5. Air dry in a clean area

6. Re-assemble the respirator

No alcohol will be used to clean the respirator. If a disinfecting solution is not used, a disinfecting spray will be used at least weekly, but preferably after each use.
Respirator wipes will be provided to employees in order to clean respirators during work shifts between uses. The employee will be allowed to leave work area and remove respirator to wash face in order to prevent rashes and discomfort. The respirators will be wiped out at each of these times.

K. Storage of Respirators

Respirators will be stored in clean plastic bags and protected against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. Respirator cartridges will have the inhalation holes covered with duct tape (or acceptable substitute tape) immediately after leaving a contaminated area. The tape will be left on until the respirator is donned for the nest entry into a contaminated area. This tape will prevent any contaminants from being dislodged from the cartridge.

Respirators should be packed or stored so that the facepiece and exhalation valve will rest in a normal position and function will not be impaired by the elastomer setting in an abnormal position.

L. Periodic Surveillance

Work areas will be monitored as required by specific hazard regulations or on a periodic timetable as set by the site-specific Health and Safety Officer and the site-specific Health and Safety Plan. This surveillance is required to ensure that the proper level of protection is provided to employees. Whenever new hazards are encountered or a substantial change in magnitude of the existing hazard occurs, then additional monitoring will take place.

M. Evaluation of Respiratory Protection Program

In order to maintain an effective program, the respiratory protection program will be re-evaluated on at least an annual basis. This evaluation will address:

- employee acceptance of program and respirators
- methods of surveillance of hazards and results
- regulatory compliance
- changing job functions
- changes in hazards

Employees are encouraged to express any concerns about respirator protection, such input is critical for evaluating the program.

Each employee will be made aware of this written program and any annual changes.

Frequent random inspections will be conducted by the Safety Coordinator to assure that respirators are properly selected, used, cleaned, and maintained.

N. Hazard Specific Respiratory Protection

As specified in 29 CFR Parts 1910, action specific hazards, i.e. lead, asbestos, and formaldehyde, require specific respiratory protection. Any such material will be monitored as directed under specific regulatory requirements, and respiratory protection will issued pursuant to specific regulatory requirement.

Appendix F

10.06 Excavations

A. Introduction

This section applies to all open excavations made in the earth's surface. Excavations are defined to include trenches.

B. General Requirements

1. All surface encumbrances that are located so as to create a hazard to employees will be removed or supported, as necessary, to safeguard employees.
2. Underground installations.
   a. The estimated location of utility installations, such as sewer, telephone, fuel, electric, water lines, or any other underground installations that reasonably may be expected to be encountered during excavation work, will be determined prior to opening an excavation.
   b. Utility companies or owners will be contacted within established or customary local response times, advised of the proposed work, and asked to establish the location of the utility underground installations prior to the start of actual excavation. When utility companies or owners cannot respond to a request to locate underground utility installations within 24 hours (unless a longer period is required by state or local law), or cannot establish the exact location of these installations, the work may proceed, provided caution is taken, and provided detection equipment or other acceptable means to locate utility installations are used.
   c. When excavation operations approach the estimated location of underground installations, the exact location of the installations will be determined by safe and acceptable means.
   d. While the excavation is open, underground installations will be protected, supported or removed as necessary to safeguard employees.

C. Access and egress

1. Structural ramps.
   a. Structural ramps that are used solely by employees as a means of access or egress from excavations will be designed by a competent person. Structural ramps used for access or egress of equipment will be designed by a competent person qualified in structural design, and will be constructed in accordance with the design.
   b. Ramps and runways constructed of two or more structural members will have the structural members connected together to prevent displacement.
   c. Structural members used for ramps and runways will be of uniform thickness.
   d. Cleats or other appropriate means used to connect runway structural members will be attached to the bottom of the runway or will be attached in a manner to prevent tripping.
   e. Structural ramps used in lieu of steps will be provided with cleats or other surface treatments on the top surface to prevent slipping.

2. Means of egress from trench excavations. A stairway, ladder, ramp or other safe means of egress will be located in trench excavations that are 4 feet (1.22 m) or more in depth so as to require no more than 25 feet (7.62 m) of lateral travel for employees.

D. Exposure to vehicular traffic

Employees exposed to public vehicular traffic will be provided with, and will wear, warning vests or other suitable garments marked with or made of reflectorized or high-visibility material.

E. Exposure to falling loads

No employee will be permitted underneath loads handled by lifting or digging equipment. Employees will be required to stand away from any vehicle being loaded or unloaded to avoid being stuck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles are equipped to provide adequate protection for the operator during loading and unloading operations.

F. Warning system for mobile equipment

When mobile equipment is operated adjacent to an excavation, or when such equipment is required to approach the edge of an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system will be utilized such as barricades, hand or mechanical signals, or stop logs. If possible, the grade should be away from the excavation.

G. Hazardous atmospheres

1. Testing and controls

In addition to the procedures set forth in Sections 3 and 4 of this Health and Safety Manual to prevent exposure to harmful levels of atmospheric contaminants and to assure acceptable atmospheric conditions, the following requirements will apply:

a. Where oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations in areas where hazardous substances are stored nearby, the atmospheres in the excavation will be tested before employees enter excavations greater than 4 feet (1.22 m) in depth.

b. Adequate precautions will be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres. These precautions include providing proper respiratory protection or ventilation in accordance with subparts D and E of this part respectively.

c. Adequate precaution will be taken such as providing ventilation, to prevent employee exposure to an atmosphere containing a concentration of a flammable gas in excess of 20 percent of the lower flammable limit of the gas.

d. When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, the testing will be conducted as often as necessary to ensure that the atmosphere remains safe.

2. Emergency rescue equipment

   a. Emergency rescue equipment, such as breathing apparatus, a safety harness and line, or a basket stretcher, will be readily available where hazardous atmospheric conditions exist or may reasonably be expected to develop during work in an excavation. This equipment will be attended when in use.
   b. Employees entering bell-bottom pier holes, or other similar deep and confined footing excavations, will wear a harness with a life-line securely attached to it. The lifeline will be separate from any line used to handle materials, and will be individually attended at all times while the employee wearing the lifeline is in the excavation.

H. Protection from hazards associated with water accumulation

1. Employees will not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation. The precautions necessary to protect employees adequately vary with each situation, but could include special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of a safety harness and lifeline.
2. If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operations will be monitored by a competent person to ensure proper operation.
3. If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, dikes, or other suitable means will be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation. Excavations subject to runoff from heavy rains will require an inspection by a competent person.

I. Stability of adjacent structures

1. Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operation, support systems such as shoring, bracing, or underpinning will be provided to ensure the stability of such structures for the protection of employees.
2. Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees will not be permitted except when:
   a. A support system, such as underpinning, is provided to ensure the safety of employees and the stability of the structure; or
   b. The excavation is in stable rock; or
   c. A registered professional engineer has approved the determination that such excavation work will not pose a hazard to employees.
   d. Sidewalks, pavements, and appurtenant structure will not be undermined unless a support system or another method of protection is provided to protect employees from the possible collapse of such structures.

J. Protection of employees from loose rock or soil

1. Adequate protection will be provided to protect employees from loose rock or soil that could pose a hazard by falling or rolling from an excavation face. Such protection will consist of scaling to remove loose material; installation of protective barricades at intervals as necessary on the face to stop and contain falling material; or other means that provide equivalent protection.
2. Employees will be protected from excavated or other materials of equipment that could pose a hazard by falling or rolling into excavations. Protection will be provided by placing and keeping such materials or equipment at least 2 feet (.61 m) from the edge of excavations, or by the use of retaining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary.

K. Inspections

1. Daily inspections of excavations, the adjacent areas, and protective systems will be made by a competent person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection will be conducted by conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections will also be made after every rainstorm or other hazard increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated.
2. Where the competent person finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees will be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

L. Fall protection

1. Where employees or equipment are required or permitted to cross over excavations, walkways or bridges with standard guardrails will be provided.
2. Adequate barrier physical protection will be provided at all remotely located excavations. All wells, pits, shafts, etc., will be barricaded or covered. Upon completion of exploration and similar operations, temporary wells, pits, shafts, etc., will be backfilled.

M. Requirements for protective systems

1. Protection of employees in excavations.
   a. Each employee in an excavation will be protected from cave-ins by an adequate protective system designed in accordance with paragraph 2 or 3 of this section except when:
      1. Excavations are made entirely in stable rock; or
      2. Excavations are less than 5 feet (1.52 m) in depth and examination of the ground by a competent person provides no indication of a potential cave-in.
   b. Protective systems will have the capacity to resist without failure all loads that are intended or could reasonably be expected to be applied or transmitted to the system.

2. Design of sloping and benching systems. The slopes and configurations of sloping and benching systems will be in accordance with the requirements of option 1; or, in the alternative, option 2; or, in the alternative, option 3, or, in the alternative, option 4, as follows:

Option (1) - Allowable configurations and slopes

1. Excavations will be sloped at an angle not steeper than one and one-half horizontal to one vertical (34 degrees measured from the horizontal), unless one of the other options listed below is used.

2. Slopes specified in paragraph 1 of this section, will be excavated to form configurations that are in accordance with the slopes shown for Type C soil in Appendix B to this subpart.

Option (2) - Determination of slopes and configurations using 29 CFR 1926 Subpart P Appendices A and B

Maximum allowable slopes, and allowable configurations for sloping and benching systems, will be determined in accordance with the conditions and requirements set forth in appendices A and B to this subpart.

Option (3) - Designs using other tabulated data

1. Designs of sloping or benching systems will be selected from and be in accordance with tabulated data, such as tables and charts.
2. The tabulated data will be in written form and will include all of the following:
   A. Identification of the parameters that affect the selection of a sloping or benching system drawn from such data;
   B. Identification of the limits of use of the data, to include the magnitude and configuration of slopes determined to be safe;
   C. Explanatory information as may be necessary to aid the user in making a correct selection of a protective system from the data.
3. At least one copy of the tabulated data which identifies the registered professional engineer who approved the data, will be maintained at the jobsite during construction of the protective system. After that time the data may be stored off the jobsite, but a copy of the data will be made available to the Secretary upon request.

Option (4) - Design by a registered professional engineer

1. Sloping and benching systems not utilizing Option (1) or Option (2) or Option (3) under paragraph 2 of this section will be approved by a registered professional engineer.
2. Designs will be in written form and will include at least the following:
   A. The magnitude of the slopes that were determined to be safe for the particular project;
   B. The configurations that were determined to be safe for the particular project; and
   C. The identity of the registered professional engineer approving the design.
3. At lease one copy of the design will be maintained at the jobsite while the slope is being constructed. After that time the design need not be at the jobsite, but a copy will be made available to OSHA upon request.

3. Design of support systems, shield systems, and other protective systems. Designs of support systems shield systems, and other protective systems will be in accordance with the requirements of opption 1; or, in the alternative, option 2; or, in the alternative, option 3; or, in the alternative, option 4 as follows:

Option (1) - Designs using appendices A, C, and D Designs for timber shoring in trenches will be determined in accordance with the conditions and requirements set forth in appendices A and C to this subpart. Designs for aluminum hydraulic shoring will be in accordance with paragraph (c)(2) of this section, but if manufacturer's tabulated data cannot be utilized, designs will be in accordance with Appendix D.

Option (2) - Designs Using Manufacturer's Tabulated Data

a. Design of support systems, shield systems, or other protective systems that are drawn from manufacturer's tabulated data will be in accordance with all specifications, recommendations, and limitations issued or made by the manufacturer.

b. Deviation from the specifications, recommendations, and limitations issued or made by the manufacturer will only be allowed after the manufacturer issues specific written approval.

c. Manufacturer's specifications, recommendations, and limitations, and manufacturer's approval to deviate from the specifications, recommendations, and limitations will be in written form at the jobsite during construction of the protective system. After that time this data may be stored off the jobsite, but a copy will be made available to OSHA upon request.

Option (3) - Designs using other tabulated data

a. Designs of support systems, shield systems, or other protective systems will be selected from and be in accordance with tabulated data, such as tables and charts.

b. The tabulated data will be in written form and include all of the following:
   1. Identification of the parameters that affect the selection of a protective system drawn from such data;
   2. Identification of the limits of use of the data;
   3. Explanatory information as may be necessary to aid the user in making a correct selection of a protective system from the data.

c. At least one copy of the tabulated data, which identifies the registered professional engineer who approved the data, will be maintained at the jobsite during construction of the protective system. After that time the data may be stored off the jobsite, but a copy of the data will be made available to the Secretary upon request.

Option (4) - Design by a registered professional engineer

a. Support systems, shield systems, and other protective systems not utilizing Option 1, Option 2, or Option 3, above, will be approved by a registered professional engineer.

b. Designs will be in written form and will include the following:
   1. A plan indicating the sizes, types, and configurations of the materials to be used in the protective system; and
   2. The identity of the registered professional engineer approving the design.

c. At least one copy of the design will be maintained at the jobsite during construction of the protective system. After that time, the design may be stored off the jobsite, but a copy of the design will be made available to OSHA upon request.

4. Materials and equipment.

a. Materials and equipment used for protective systems will be free from damage or defects that might impair their proper function.

b. Manufactured materials and equipment used and maintained in a manner that is consistent with the recommendations of the manufacturer, and in a manner that will prevent employee exposure to hazards.

c. When material or equipment that is used for protective systems is damaged, a competent person will examine the material or equipment and evaluate its suitability for continued use. If the competent person cannot assure the material or equipment is able to support the intended loads or is otherwise suitable for safe use, then such material or equipment will be removed from service, and will be evaluated and approved by a registered professional engineer before being returned to service.

5. Installation and removal of support

a. General.

1. Members of support systems will be securely connected together to prevent sliding, falling, kickouts, or other predictable failure.
2. Support systems will be installed and removed in a manner that protects employees from cave-ins, structural collapses, or from being struck by members of the support system.
3. Individual members of support systems will not be subjected to loads exceeding those which those members were designed to withstand.
4. Before temporary removal of individual members begins, additional precautions will be taken to ensure the safety of employees, such as installing other structural members to carry the loads imposed on the support system.
5. Removal will begin at, and progress from, the bottom of the excavation. Members will be released slowly so as to note any indication of possible failure of the remaining members of the structure or possible cave-in of the sides of the excavation.
6. Backfilling will progress together with the removal of support systems from excavations.

b. Additional requirements for support systems for trench excavations.

1. Excavation of material to a level no greater than 2 feet (.61 m) below the bottom of the members of a support system will be permitted, but only if the system is designed to resist the forces calculated for the full depth of the trench, and there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the support system.

2. Installation of a support system will be closely coordinated with the excavation of trenches.

N. Sloping and benching systems

Employees will not be permitted to work on the faces of sloped or benched excavations at levels above other employees except when employees at the lower levels are adequately protected from the hazard of falling, rolling, or sliding material or equipment.

O. Shield systems

1. General
   a. Shield systems will not be subjected to loads exceeding those which the system was designed to withstand.
   b. Shield will be installed in a manner to restrict lateral or other hazardous movement of the shield in the event of the application of sudden lateral loads.
   c. Employees will be protected from the hazard of cave-ins when entering or exiting the areas protected by shields.
   d. Employees will not be allowed in shield when shields are being installed, removed, or moved vertically.
2. Additional requirement for shield systems used in trench excavations. Excavations of earth material to a level not greater than 2 feet (.61 m) below the bottom of a shield will be permitted, but only if the shield is designed to resist the forces calculated for the full depth of the trench, and there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the shield.

Appendix G

This Certifies That

David Schramm

272-44-3108

has satisfactorily completed the

Health and Safety at Hazardous Waste Operations

8 Hour Supervisors Course

given July 18, 1990

developed persuant to 29 CFR 1910.120
Hazardous Waste Operations & Emergency Response

by
O'Brien & Gere Engineers, Inc.
Syracuse, New York

July 26, 1990

Saunders E. Wilson, Jr., C.I.H.
Chief Instructor

Edwin C. Tifft, Jr., Ph.D.
Senior Vice President

TECHNICAL ENVIRONMENTAL SERVICE TRAINING INSTITUTE

certifies that

DAVID M. SCHRAMM

has successfully met the 29 CFR 1910.120 certificate requirements for the course entitled

8 HOUR HEALTH & SAFETY TRAINING
- ANNUAL REFRESHER (E-8) -

and in evidence thereof is awarded this

CERTIFICATE OF COMPLETION

on the 13 TH day of AUGUST , 19 92

AUGUST 13, 1992
Passed Exam

HSR-00494
Certificate Number

Anthony L. Egitto, Director

TEST institute

1110 Navaho Dr. • Suite 602 • Raleigh, North Carolina 27609 • 919 876 8440

Thomas B. Wehrle

Has attended the course:

Health and Safety at Hazardous Waste Operations: Annual Refresher for HAZWOPER,

a course developed pursuant to the regulations of 29 CFR 1910.120.

This course was conducted by

O'Brien & Gere Engineers, Inc.

P.O. Box 4873, Syracuse, New York 13221; telephone (315)437-6100.

This course is required by the Occupational Safety and Health Administration.

Certificate number: 591-153-44-8276

Date of course: May 29, 1992

Expiration date: May 29, 1993

Vice President

Trainer

Thomas B. Wehrle

Has attended the course:

Health and Safety at Hazardous Waste Operations:

Refresher for the 40-hour Course

a course developed pursuant to the requirements of 29 CFR 1910.120.

This course was conducted by

O'Brien & Gere Engineers, Inc.

P.O. Box 4873, Syracuse, New York, 13221; telephone (315)437-6100

This course is required by the Occupational Safety and Health Administration.

Certificate number: 591-153-44-8276

Date of course:04/05/91

Expiration date:04/04/92

Vice President

Instructor

con-test®
WATER AND AIR ENGINEERING
39 Spruce Street
East Longmeadow, MA 01028

No. 8HMR-0351

CAROLINE MILLER

In recognition of having successfully completed the prescribed course of study for Hazardous Waste Site Activities - 8 Hour Health and Safety Annual Refresher Training on August 21, 1992.

COURSE INSTRUCTORS

Thomas E. Veratti, Vice President
Certified Chemical Engineer
Industrial Hygienist

Expires August 21, 1993

Caroline W. Miller

Has attended the course:

Health and Safety at Hazardous Waste Operations: Supervisor,

a course developed pursuant to the regulations of 29 CFR 1910.120.

This course was conducted by

O'Brien & Gere Engineers, Inc.

P.O. Box 4873, Syracuse, New York 13221; telephone (315)437-6100.

This course is required by the Occupational Safety and Health Administration.

Certificate number: 691-099-42-0338

Date of course: January 23, 1992

Expiration date: January 23, 1993

Vice President

Trainer

Attachment 1

APPENDIX F
SIGN-OFF SHEETS

Project Name ______________________________

This is to certify that I have read, fully understand and agree to comply fully with the attached Health and Safety Plan furnished to me by OBG TECHNICAL SERVICES Inc. for the above project.

NAME	SIGNATURE	COMPANY	DATE

PROJECT TASKS

The past photographic waste management practices utilized in Building 731, Naval Ordnance Station, Indian Head, Maryland has resulted in elevated silver concentrations within the two drainage ditches leading from the building. The purpose of this project is to remediate the contaminated soil on-site and incorporate the treated material within an on-site explosion berm. This will be accomplished by excavating the soils/sediments in the two drainage ditches exhibiting silver concentrations greater than 10 mg/kg and treating the material on-site utilizing solidification/stabilization technology. The treated material will then be incorporated in the base of an on-site explosion berm.

Access Roads/Routes:

The primary site access road is the existing dirt road, as shown in Figure 1. Access routes along one side of both drainage ditches will be constructed to allow excavation and haul equipment access from the dirt road. These routes shall consist of cleared paths, approximately fifteen feet wide, that are immediately adjacent to the twelve foot wide section of the stream bed that is to be excavated. Since the excavation zone for the ditches is approximately twelve feet wide, the portions of both ditches that are to be excavated will lie approximately in the center of the 40 foot wide cleared area, twenty feet on each side from the center of the ditch. The routes shall be properly graded to prevent stormwater from ponding within the routes, and to prevent other conditions that may impede the access of vehicles or the progress of work. Silt fence will be installed along the perimeter of the 40 foot wide cleared areas.

Decontamination Facility:

A personnel decontamination facility will be provided for use by OBG Tech's personnel and others visiting the site. The facility will include a changing room, lockers, and showers. Two concrete decontamination pads (Figure 2) for vehicles and equipment leaving the exclusion zone will be constructed along the existing dirt road.

Exclusion Zone:

Exclusion zones will be established within the security fence. The zones include the excavation areas and the stockpile/treatment area. Entrance to the exclusion zones will only be through the personnel and vehicle decontamination zones.

Contaminated Soils/Sediments Staging Area:

A staging area for contaminated soils/sediments will be constructed to contain stockpiled soil prior to stabilization. The area will be constructed to prevent migration of contamination from dewatering of excavated soils or from storm water runoff. This area will be located as shown in Figure 1 and will be constructed with clean fill that will be used later as soil cover.

Treatability Testing:

A testing program, developed from representive samples collected from the drainage swales, will be implemented to ensure the successful stabilization of the soil/sediments. Bench-scale testing is used to evaluate the physical, chemical, and geotechnical properties of the untreated and treated materials.

The representative soil samples collected from the drainage swales will be analyzed in our laboratory. The following tests will be performed to evaluate the physical characteristics of various additive mix designs:

Test	Method
Moisture Content	ASTM D2216
Compaction	ASTM D1557
Unconfined Compressive Strength	ASTM D2166

The in-place soil/sediment is on the wet side of optimum dry density. Various mix designs will be used in the laboratory to achieve the desired engineered structural fill characteristics, that can be expected for the treated emplaced material at optimum moisture-density. A minimum of two different additive systems will be explored at various ratios in the laboratory to achieve the desired results. Results of these mix designs will be presented to the Government Representative for review and selection of the optimum mix design. The selected mix design will be analyzed for TCLP Silver (Method 1311, EPA SW-846). Results of this analytical test will be forwarded to the Government Representative prior to any on-site treatment.

Waste Excavation and Handling:

Silver-contaminated soil/sediments will be excavated from the drainage swales with a track excavator. The track excavator will be situated on the access route adjacent to the swale and will load directly into the haul trucks. Confirmatory sampling will be conducted by the Government Representative to ensure attainment of target cleanup levels. As necessary, the Government Representative may direct additional soils/sediments excavation to attain the target cleanup level. All excavated materials shall be handled in such fashion as to prevent the release of the contaminated soil to the environment, and to minimize impacts to the adjacent forest, forest floor, or vegetation. Contaminated soils/sediments shall be loaded directly into leak-proof vehicle and promptly moved to the stockpile/treatment area. Any subsequent handling of the soils/sediments, such as consolidation or dewatering, will occur in this area. Off-site disposal is not anticipated for any of the soils/sediments. Tree stumps excavated from the stream bed will have the soil removed for treatment and the stump will be decotaminated for off-site disposal.

Remediation Sampling Program:

Target Level Sampling During Excavation: Subsequent to excavation of the specified dimensions and volumes of the stream bed sediments, confirmatory samples of the unexcavated soil will be acquired by the Government Representive, to ensure that remaining soils and sediments have silver

concentrations of 10 mg/kg or less. Silver concentration analytical results shall be made available to OBG Tech on a rush turnaround basis. This data will be used by the Government Representive to direct any additional excavation.

Treatment-Related Sampling: Treated soils and sediments will be sampled prior to their placement in the area of the proposed explosion berm. Acceptance testing preformed on each sample will ensure that: (1) treated materials meet physical geotechnical requirements of the design mix selected by the Government Representative; and (2) silver in the treated material is not leachable, and will therefore remain immobile within the berm structure.

Samples of the treated soil will be obtained after every 100 cubic yards of production. The samples will be analyzed for TCLP Silver (Method 1311, EPA SW-846) and a Modified Proctor (ASTM D1557). The results of the Compaction test will be used in conjunction with the testing of the emplaced treated soil with the nuclear density meter to assure conformance with the specifications for placement of the treated soils. Results of this testing will immediately be made available to the Government Representative.

Wastewater-Related Sampling: Sampling of all wastewater that is: (1) used during decontamination procedures; of (2) extracted from the excavation or untreated material shall be collected and analyzed. Silver concentrations must be 1 milligram per liter (mg/l) or less to discharge into the Facility's sewage system. Wastewater to be discharged into the Facility's sewage system may not have biochemical oxygen demand (BOD) levels of greater than 200 mg/l, or total suspended solids (TSS) levels above 30 mg/l. Wastewater not meeting these requirements shall be pretreated to achieve the specified standards. Analytical results will be provided to the Government Representive. Approval shall be obtained prior to discharge to the Facility's sewer system.

Solidification/Stabilization:

Treatment of the excavated material will be preformed using a contained treatment system. The mixing process utilizes equipment in which the contaminated soils/sediments and stabilization additive are loaded and mixed. The mixing process is achieved by mixing blades blending the additive/soil mixture into the proper percentage of additive and moisture. Treatment will be initiated employing the design mix accepted by the Government Representative which demonstrates the ability to meet explosion berm construction material/performance requirements including load-bearing and compactability characteristics as well as exhibiting acceptable TCLP leachability characteristics (levels of silver in leachate below detection limits). Treatment shall be conducted in a manner which minimizes the potential for release of contaminated material to the environment.

Placement/Compaction/Capping of Treated Material:

Subsequent to treatment and acceptable analytical results, the stabilized soil/sediment will be placed and compacted in an area within the foot print of the proposed explosion berm. Prior to placement, all site preparation activities associated with construction of the explosion berm (e.g., subgrade preparation) will be completed for the area where the stabilized soil will be placed. The stabilized soil will be placed and compacted in 6 inch lifts on suitable subgrade. the stabilized soil will be compacted not less than 92 percent of maximum as determined by Modified Proctor. The final layer of solidified material will be uniformly graded to provide an appropriate base for the 1 foot thick soil cap. The soil cap will be placed and compacted over the treated soil.

Restoration/Demobilization:

Removal of Material Storage/Staging and Decontamination Areas: At the completion of the project, the construction support area shall be removed. All waste materials shall be disposed in an appropriate manner and areas restored to the pre-existing contours and conditions.

Restoration of the Drainage Ditch Network: The excavation area shall be backfilled and graded to contours consistent with those specified in the design drawings. The material used to backfill the swale area will be the same as the soil that has been approved for used in the construction of the explosion berms. The backfill material will be placed in one foot lifts and compacted not less than 90 percent of maximum as determined by Modified Proctor. Jute matting will be utilized to prevent erosion within the restored drainage ditches.

Revegetation: Areas disturbed by the remedial action shall be restored after the completion of the backfilling, compaction, and grading.

Removal of Equipment, Field Office, and Silt Fencing: All equipment, support facilities, and silt fencing installed to execute the remedial action will be removed from the facility. The treatment system will not be removed until all contaminated soils/sediments from the ditches have been treated and incorporated into the explosion berm.

SPILL/DISCHARGE CONTROL PLAN

OBG Technical Services, Inc. (OBG Tech) has developed a spill control plan to implement, maintain, and oversee spill and discharge control. This plan shall provide contingency measures for on-site spills, off-site spills or discharges from handling, staging, or transport of potentially hazardous materials.

1. If a spill of any size occurs, OBG Tech will immediately notify the Government Representative and the Facility's Air and Hazardous Waste Management Branch at (301) 743-6745 or (301) 743-5746 and implement the spill/discharge control plan. A Spill Report shall be provided to the Government Representative identifying the cause and extent of the spill, any resulting contamination danger, and corrective actions taken.

2. OBG Tech will provide methods, means, and facilities required to prevent contamination of soil, water, atmosphere, uncontaminated structure equipment, or material by the discharge of wastes from spills due to OBG Tech's operation.

3. OBG Tech will provide equipment and personnel to perform emergency measures required to contain any spills that OBG Tech has caused and remove spilled materials and soil or liquids that become contaminated due to spillage. This collected spill material shall be properly disposed of at OBG Tech's expense.

4. OBG Tech will provide for any unexpected spills or discharges with the following equipment to be kept on-site at all times during site activities:

    - Noncombustible absorbent
    - Front-end loader

- Drums (55-gallon USDOT 17-E or 17-H)
- Shovels

5. OBG Tech will take immediate measure to control and contain the spill within the site boundaries. This shall include the following actions:

    - Isolate and contain hazardous spill areas
    - Deny entry to unauthorized personnel
    - Do not allow anyone to touch spilled material
    - Stay upwind; keep out of low areas
    - Keep combustibles away from the spill material
    - Use water spray to reduce vapors and dust, as needed
    - Take samples for analysis to determine that clean-up is adequate
    - Other actions, as needed.

6. OBG Tech will absorb all liquid spills with noncombustible absorbent material, and dispose of the absorbent/spill mixture in the manner specified above.

7. If a discharge of any material stored in drums occurs, OBG Tech will take the following actions to reduce potential migration to adjacent properties:

    - Contain and eliminate the discharge, if possible
    - Remove or retrieve any discharged liquids, if possible
    - Isolate the hazardous area and deny entry to unauthorized personnel
    - Do not allow anyone to touch the discharge materials
    - Other actions as needed

8. For liquid discharged to the soil, OBG Tech will immediately identify the point of discharge, and take measure to eliminate further spills. The discharged material shall be absorbed with a noncombustible absorbent material, specifically designed for the absorption of potentially hazardous wet wastes and the absorbent/discharge mixture shall be placed into dry containers.

9. Decontamination procedures may be required after clean-up to eliminate traces of the substances spilled or reduce it to an acceptable level as determined by the Government Representative. Complete clean-up may require removal of contaminated soils. Personnel decontamination shall include showers and cleansing if necessary and or disposal of clothing and equipment. All contaminated materials including cloth, soil and wood that cannot be decontaminated must be properly containerized, labeled, and disposed of as soon as possible.

DUST CONTROL PLAN

OBG Technical Services, Inc. (OBG Tech) will provide full shift air monitoring during remedial activities. The on-site certified industrial hygienist will monitor potential exposure and migration of blowing dust (especially contaminated or potentially contaminated dust). The following procedures will be implemented for dust control.

1. Assign one individual, supervised by the certified industrial hygienist, whose responsibility it is to prevent migration and blowing of contaminated or potentially contaminated dust.

2. Water will be applied as needed by methods approved by the Government Representative with equipment including a tank, pressure pump, and a nozzle equipped spray bar.

3. Water will be applied in a manner which will not cause runoff, ponding, muddy conditions, or result in soil erosion.

4. Excavated and stockpiled soil will be covered or kept wet as needed to avoid dust.

5. Engineering controls necessary to prevent dusting will be implemented during OBG Tech's construction activities.

RUNOFF CONTROL PLAN

The Runoff Control Plan requires the use of controls and measures to prevent and manage storm or decon water runoff. The following requirements are:

1. Prevent runoff from contaminating other soils and prevent off-site runoff from entering open excavations.

2. Assign one individual whose responsibility is to prevent runoff from decontamination pad during decontamination activities.

3. Obtain Government Representative approval for implementing alternate runoff control measure.

Implementation of the Runoff Control Plan during construction activities shall be performed by the following tasks:

1. The swale areas to be excavated will be protected from water runoff with soil berms around the perimeter of the 40 foot cleared areas. In addition, silt fence will be installed at the perimeter of the 40 foot cleared areas to control runoff from the berms.

2. The stockpile area for the contaminated soil will have a two foot soil berm constructed around the perimeter of the area to prevent the migration of runoff water from the stockpiled soil and to prevent runoff water from entering the stockpile area.

3. OBG Tech will collect rainwater and decontamination washwater from the decontamination pad. The Government Representative will perform required testing analyses on the collected water, with a maximum 24 hour turnaround time. No more than 1,000 gallons of contained wastewater may be stored at the Facility at any one time with a maximum storage time of 48 hours.

4. All collected wastewater from the decontamination pad that yields samples with a silver concentration of 1 mg/l or less, BOD of 200 mg/l or less, and TSS of 30 mg/l or less, may be discharged into the Facility's sewage system. OBG Tech will furnish the equipment necessary for proper discharge of wastewater.

5. If the analytical results indicate that silver, BOD, and/or TSS levels in the contained water are greater than the levels specified above, OBG Tech shall: a) pretreat to the specified standards for discharge to the Facility's sewage system; or b) dispose of the wastewater off-site in an acceptable manner.

REMEDIATION-RELATED WASTEWATER CONTROL

Implementation of the Remediation-Related Wastewater Control Plan during construction activities shall be performed by the following tasks:

1. OBG Tech shall collect rainwater and decontamination washwater from the decontamination pad. The Government Representative will perform required testing analyses on the collected water, with a maximum 24-hour turnaround time. No more than 1,000-gallons of contained wastewater may be stored at the Facility at any one time with a maximum storage time of 48 hours.

2. All collected wastewater from the decontamination pad that yields samples with a silver concentration of 1 mg/l or less, BOD of 200 mg/l or less, and TSS of 30 mg/l or less, may be discharged into the Facility's sewage system. OBG Tech will furnish the equipment necessary for proper discharge of wastewater.

3. If the analytical results indicate that silver, BOD, and/or TSS levels in the contained water are greater than the levels specified above, OBG Tech shall: a) pretreat to the specified standards for discharge to the Facility's sewage system; or b) dispose of the wastewater off-site in an acceptable manner.

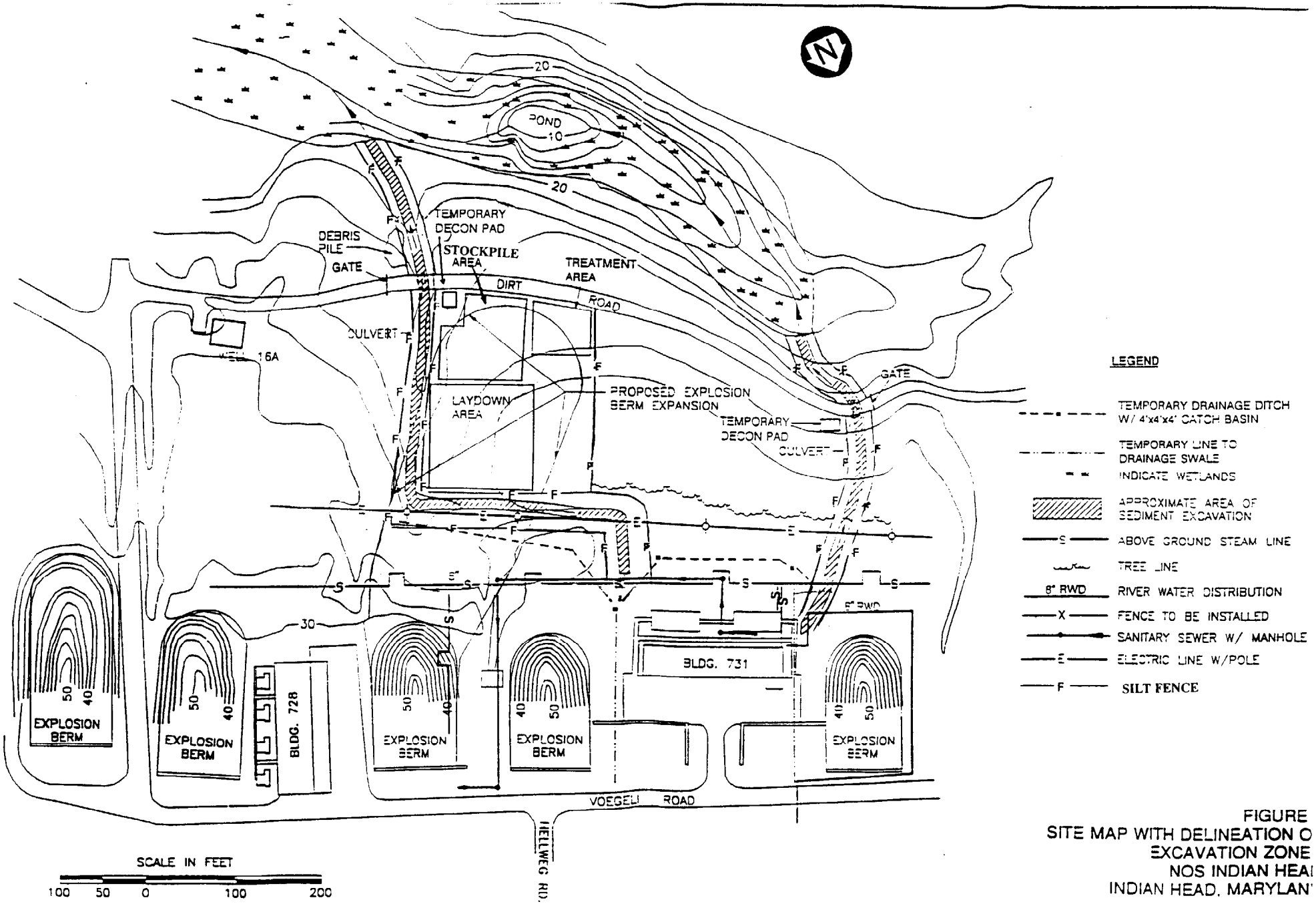
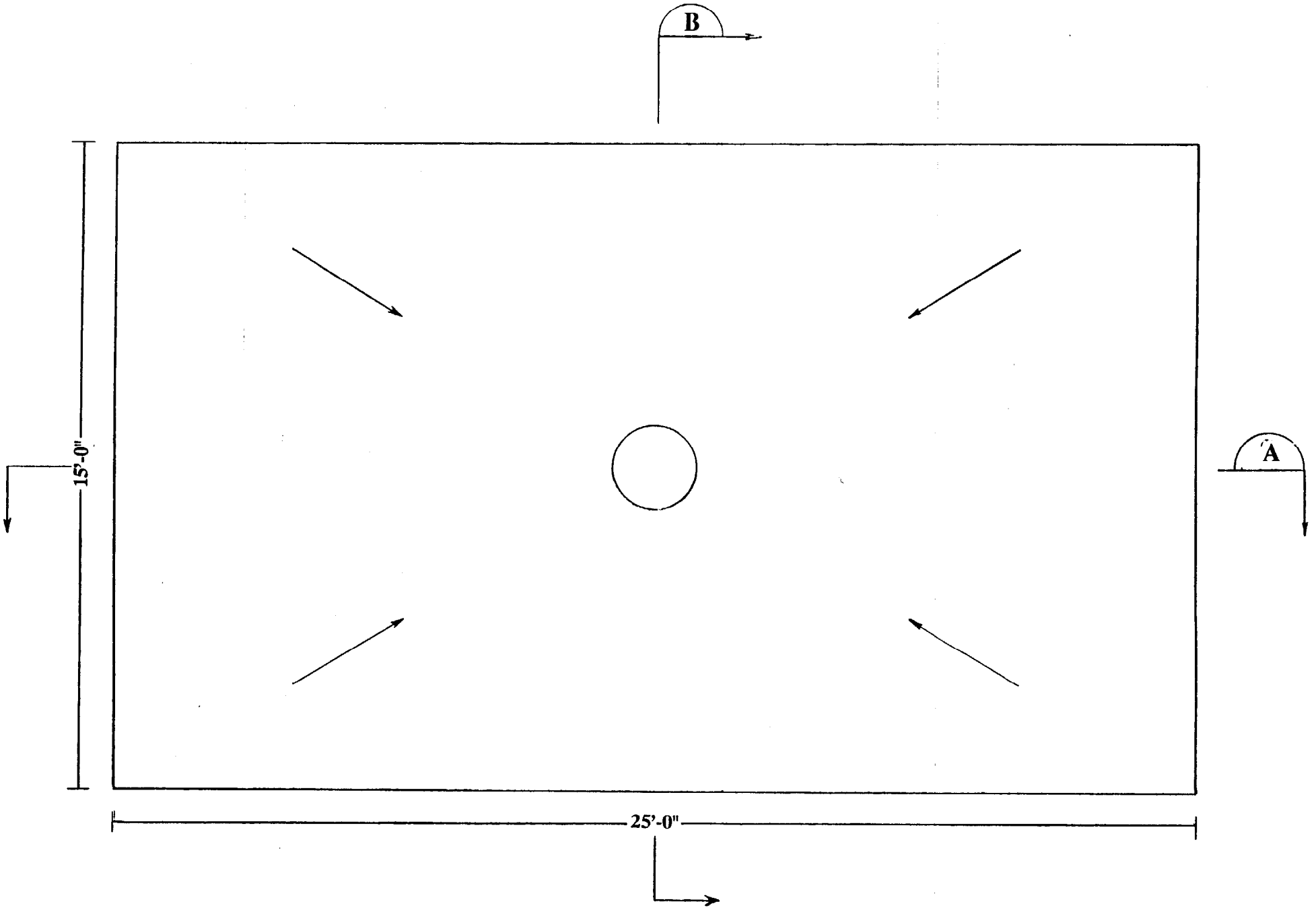


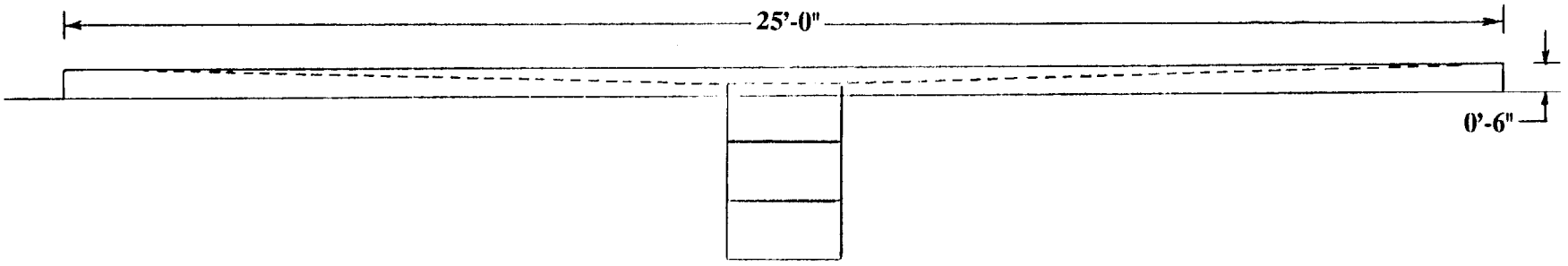
FIGURE
SITE MAP WITH DELINEATION O
EXCAVATION ZONE
NOS INDIAN HEA
INDIAN HEAD, MARYLAN

DECONTAMINATION PAD



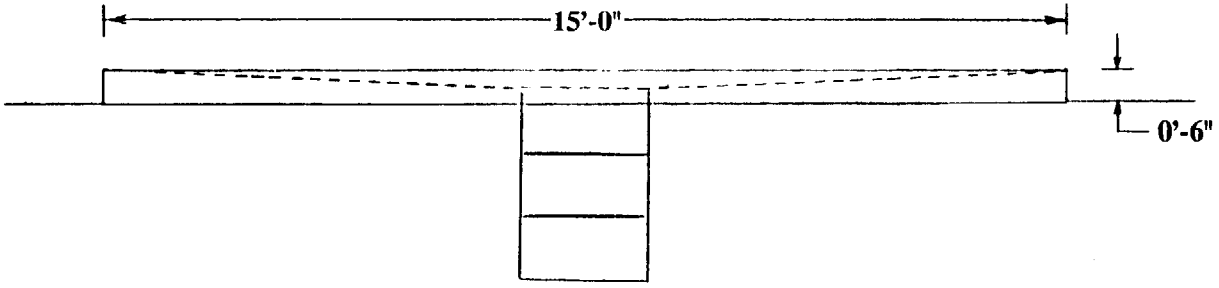
SCALE: 1" = 3'- 0"

DECONTAMINATION PAD



SECTION A

SCALE: 1" = 3'- 0"



SECTION B

SCALE: 1" = 3'- 0"