FINAL
Site-Specific Safety and Health Plan

Stabilization, Excavation and Disposal of Contaminated Soil
Plum Brook Ordnance Works
Pentolite Road Red Water Ponds
Sandusky, Ohio

Contract No. DACW69-02-D-0004
Work Order No. 013

Prepared for:

Department of the Army
Huntington District, Corps of Engineers
Huntington, WV

Prepared by:

WasteTron Inc.
Rt. 2 Box 33-B
Poca, WV 25159
(304) 755-8448
(304) 755-1099 FAX

December 2002
WasteTron Project # WT5536

	12/16/02
SSHP Developer	**Date**

Site-Specific Safety and Health Plan

Stabilization, Excavation and Disposal of Contaminated Soil
Plum Brook Ordnance Works
Pentolite Road Red Water Ponds
Sandusky, Ohio

Contract No. DACW69-02-D-0004
Work Order No. 013

TABLE OF CONTENTS

Table of Contents
(continued)

Table of Contents
(continued)

Definitions and Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
CFR	Code of Federal Regulations
COC	Constituents of Concern
CPR	Cardiopulmonary Resuscitation
DERP	Defense Environmental Restoration Program
DNT	Dinitrotoluene
EPA	United States Environmental Protection Agency
FS	Feasibility Study
GSA	General Service Administration
HASP	Health and Safety Planner
HAZWOPER	Hazardous Waste Operations and Emergency Response
HTF	Hypersonic Tunnel Facility
HTRW	Hazardous, Toxic, and Radioactive Waste
IQCT	Independent Quality Control Team
IDLH	Immediately Dangerous to Life and Health
IDW	Investigation Derived Waste
MSDS	Material Safety Data Sheet
NASA	National Aeronautics and Space Administration
NIOSH	National Institute for Occupational Safety and Health
NTCRA	Non-time Critical Removal Action
OSHA	Occupational Safety & Health Administration
PAH	Polynuclear Aromatic Hydrocarbons
PBOW	Plum Brook Ordnance Works

PBS	Plum Brook Station
PCBs	Polychlorinated Biphenyls
PEL	Permissible Exposure Limit
POC	Point of Contact – technical point of contact for the U.S. Army Corps of Engineers
PPE	Personal Protective Equipment
PRRWP	Pentolite Road Red Water Ponds
PRGs	Preliminary Remediation Goals
QA	Quality Assurance
QC	Quality Control
QAP	Quality Assurance Plan
QCP	Quality Control Plan
REIC	Research Environmental and Industrial Consultants
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RGO	Remedial Goal Option
SOW	Scope of Work
SSHO	Site Safety and Health Officer
SSHP	Site-Specific Safety and Health Plan
USACE	United States Army Corps of Engineers
TCLP	Toxicity Characteristic Leaching Procedure
TNT	Trinitrotoluene
TWA	Time Weighted Average

FINAL
Site-Specific Safety and Health Plan

Stabilization, Excavation and Disposal of Contaminated Soil
Plum Brook Ordnance Works
Pentolite Road Red Water Ponds
Sandusky, Ohio

Contract No. DACW69-02-D-0004
Work Order No. 013

1.0 INTRODUCTION

1.1 Purpose

The purpose of this site-specific safety and health plan (SSHP) is to establish mandatory safety practices and procedures for all work conducted for the U. S. Army Corps of Engineers (USACE). Applicability extends to all employees, subcontractors, and visitors. This plan assigns responsibilities and establishes standard operating procedures for field personnel working on this project. During development of this plan, consideration was given to safety standards as defined by the Occupational Safety and Health Administration (OSHA), the National Institute for Occupational Safety and Health (NIOSH), and the USACE Manual (EM 385-1-1, September 1996 Edition).

1.2 Visitors

WasteTron personnel, the USACE and National Aeronautics and Space Administration (NASA) points of contacts listed in Section 4.1 of this plan, drillers, and the Site-Specific Safety and Health Officer (SSHO) are not considered visitors, they are considered project personnel who have the necessary safety training (Hazardous Waste Operations and Emergency Response (HAZWOPER) training) to enter a potentially contaminated area. Also, the surveyors (Mountain State) and the companies performing transportation services (Barnes Nursery, Dart Trucking, and Enviro-Clean) are considered project personnel. However, they are limited to performing non-intrusive activities that are not likely to result in exposure; therefore, they are not required to have HAZWOPER training. All project personnel are required to review this SSHP. All others will be considered visitors to the site. All visitors entering the work area at the site will be required to sign in with the site safety and health officer (SSHO) or the Project Manager and review this site specific safety and health plan. Appendix C contains a copy of the visitor log form to be used on-site. Visitors that do not meet the training requirements of 29 CFR 1910.120 will not be allowed to perform intrusive activities. In the event that a visitor does not adhere to the provisions of this plan, that person will be asked to leave the work area.

1.3 Safety Policy Enforcement

WasteTron field personnel and subcontractors are required to familiarize themselves with this plan so that they may adhere to its safety provisions. The provisions of this site specific safety policy will be enforced. Failure to comply will be grounds for disciplinary action for employees, and non-compliant visitors will be required to leave the work zone. A copy of the WasteTron general safety policy is included in Appendix F.

Pursuant to the Scope of Work, coordination with Plum brook Station (PBS) personnel will be conducted by USACE to ensure that WasteTron is allowed access to/from the site to perform all activities during this removal action. WasteTron and its subcontractors shall be required to enter/exit through the PBS security gate and to adhere to the PBS security and safety regulations. WasteTron personnel and subcontractors are required by NASA to review a safety video and orientation prior to performing any on-site activities. WasteTron is responsible for ensuring that WasteTron employees and subcontractors follow all rules set forth by the PBS personnel. Security and safety requirements, as set forth by PBS, shall not be compromised. A pre-construction meeting between WasteTron personnel, WasteTron subcontractors, USACE personnel, and NASA personnel shall be held prior to beginning field work.

2.0 PROJECT DESCRIPTION

2.1 Introduction and Site History

The purpose of the SOW is for the completion of a non-time critical removal action (NTCRA) within the Pentolite Road Red Water Ponds (PRRWP) area of the Plum Brook Ordnance Works (PBOW) project site. The United States Army Corps of Engineers (USACE) is the responsible authority for the former PRRWP area under the Defense Environmental Restoration Program (DERP). Based on the results of the completed Remedial Investigation/Feasibility Study (RI/FS) for soils, the USACE will conduct a NTCRA in the PRRWP area to prevent human exposure to site soil containing 2,4,6-trinitrotoluene (TNT), which is the primary constituent of concern (COCs) that was detected at concentrations that exceeded the site remediation goals. The remedial goal shall be met by a removal action that will consist of the excavation of approximately 148 cubic yards of material, backfilling of the excavation pit with clean material, ex-situ stabilization of the excavated material, and off-site disposal of the stabilized soil.

The site of the former Plum Brook Ordnance Works (PBOW) is located approximately 4 miles south of Sandusky, Ohio and 59 miles west of Cleveland, Ohio. Although primarily in Perkins and Oxford Townships, the eastern edge of the site extends into Huron and Milan Townships. PBOW is bounded on the north by Bogart Road, on the south by Mason Road, on the west by County Road 43, and on the east by U.S. Highway 250. The surrounding area is mostly agricultural and residential.

The 9,009-acre PBOW site was built in early 1941 as a manufacturing plant for 2,4,6-trinitrotoluene (TNT), dinitrotoluene (DNT), and pentolite. Production of explosives at PBOW began in December 1941 and continued until 1945. It is estimated that more than 1 billion pounds of nitroaromatic explosives were manufactured during the 4-year operating period.

The PRRWP is located just south of the Pentolite Road and southeast of the former Pentolite Area. Wastewater from TNT manufacturing areas A and B was sent by wooden flumes and ceramic pipes to the Waste Water Disposal Plant #1 which was located about 700 feet east of the PRRWP. The wastewater was then discharged from the Disposal Plant #1 through pipes to the PRRWP.

The National Aeronautics and Space Administration (NASA) acquired the property on March 15, 1963 and currently utilizes the site as the Plum Brook station (PBS) of the John Glenn Research Center. Most of the aerospace testing facilities at the site were built in the 1960's and are currently in standby or inactive status. On April 18, 1978, NASA declared approximately 2,152 acres of PBOW as excess. The Perkins Township Board of Education acquired 46 acres of the excess acreage and uses this area as a bus transportation area. The Government Services Administration (GSA) retains ownership of the remaining of the excess acreage and currently has a use agreement with Ohio National Guard for 604 acres of the land. NASA presently controls approximately 6,400 acres and is using the site to conduct space research as a satellite operation of the John Glenn Research Center at Lewis Field.

GSA performed decontamination efforts during 1963 to facilitate land transfer to NASA. An April 1977 memorandum (Teledyne Isotopes, 1977) stated that PBS personnel discovered red-brownish water coming from an area of broken drain tile associated with the PRRWP. The memorandum stated that PRRWP associated dikes, sump pits, and 60,000 gallons of red water were removed, the ponds backfilled, and grading and draining improvements were made to alter runoff patterns (Dames And Moore, 1997).

2.2 Proposed Action Description

To provide a basis for taking an action at this site, a remedial investigation (RI) was conducted under the title Risk Assessment and Direct Push Investigation of the Red Water Pond Areas (IT, 2000). Twenty surface soil samples, 39, sub-surface soil samples, and 20 direct push groundwater samples were collected in the PRRWP during the RI. In addition, the RI included collection of four co-located surface water and sediment samples, two each in the east to west ditch and two in the east to southeast ditch. Various nitroaromatics were detected in the soil and groundwater direct push samples. Nitroaromatic compounds were not detected in the surface water or sediment samples.

The Feasibility Study (FS) performed by IT Corporation in 2002 and the human health risk assessment revealed that approximately 148 cubic yards of material located in PRRWP presents an unacceptable risk to human health through exposure to TNT contaminated soils above a remedial goal option (RGO) of 13.8 mg/kg for TNT in soil. The remedial goal shall be met by a removal action that will consist of the excavation of the 148 cubic yards (approximately 225 tons) of nitroaromatic contaminated soil, backfilling of the excavation pit with clean material, ex-situ stabilization of the excavated soil, and off-site disposal of the stabilized soil.

Pursuant to the Scope of Work SOW), representative soil samples of the stabilized soil shall be collected at a rate of one for every 150 tons of processed soil (2 field samples and 1 QC samples). The samples shall be tested for hazardous characteristics using full TCLP analysis. If the soil tests non-hazardous, it will be disposed of at a non-hazardous landfill. If the soil is found to be hazardous, further stabilization and sampling will be required. Any water generated during the excavation shall be containerized, sampled, and disposed in accordance with local, state, and federal regulations.

2.3 Tasks

The following tasks are required to be performed under this Scope of Work:

Task 1 Preparation and submission of a Site Specific Safety and Health Plan.

Task 2 Preparation and submission of a Quality Control Plan.

Task 3 Preparation and submission of a Plan of Operations, which shall include information on the disposal of Investigation Derived Waste, Erosion Control Plan, Spill Containment Plan, Sampling and Analysis Plan, Environmental Protection Plan and a Materials Handling Plan.

Task 4 Notification/scheduling of field activities and coordination of utility marking with NASA officials prior to site mobilization.

Task 5 Site surveying is necessary for identifying limits of excavation.

Task 6 Excavation of Contaminated Material (removal of approximately 148 cubic yards of contaminated material from PRRWP area).

Task 7 Chemical stabilization of excavated soils classified as hazardous waste and subsequent testing of mixed soils prior to disposal.

Task 8 Disposal of Investigation Derived Waste (IDW).

Task 9 Confirmation sampling will be performed.

Task 10 Preparation and submission of the Draft and Final Remedial Action Report.

Task 11 Public meeting support will be provided to the USACE for the work defined by this delivery order.

2.4 Summary of Field Activities

In accordance with contract requirements, WasteTron will notify the USACE POC and provide a schedule of events prior to beginning field activities. WasteTron has retained Mountain State Company to perform surveying of the PRRWP excavation area. After Mountain State performs

the survey, WasteTron will submit the survey information with a digging permit form to the NASA Plum Brook Station (PBS) Point of Contact (POC). WasteTron will not perform excavation activities until NASA issues a digging permit.

Investigation derived waste (IDW) drums and other project materials (plastic, sampling equipment, decontamination solvents, so forth) will be stored in the storage area currently used for TNT B area. This storage area is located behind the office trailer. WasteTron does not intend to store backfill material on-site.

WasteTron proposes to place the excavated soil into a plastic lined pit approximately 25' wide by 60' long and 3' tall. The pit would serve to hold the soil while waiting for analytical data (TCLP analysis for disposal purposes) from the laboratory and can serve as a "mixing" area if the analytical data reveals that the soil must be treated to pass TCLP analysis.

To construct the storage/mixing area for the excavated soil, an approximately 1-½ foot depression shall be constructed near the PRRWP excavation area. A 1-½ foot berm of clean soil will be constructed around the perimeter of the depression so that the height from the bottom of the depression to the top of the berm is approximately 3 feet. Three layers of overlapping 6-mil polyethylene plastic will be laid in the depression and up over the berms.

Excavated material will be sampled and analyzed for hazardous characteristics utilizing the TCLP analysis for volatiles, semi-volatiles, and metals. If the soil tests non-hazardous, stabilization will not be necessary and the soil may be disposed in a non-hazardous landfill. The walls and the floor of the excavation will be field tested to determine if excavation has been sufficient to remove the contaminated nitroaromatics prior to sending confirmation samples to the laboratory. Analytical data from the confirmation sampling shall be compared to the remedial goal option (RGO) set for the Pentolite Road Red Water Ponds. Only one RGO (13.8 mg/kg for TNT) was set for this area.

If the material is found to be hazardous, a bench scale test study will be performed to determine if the material can be stabilized/solidified with Portland cement and granular activated carbon in order for it to pass the TCLP test. Based upon the findings of the bench scale testing and in coordination with the USACE POC, the appropriate "mix" (soil plus cement/carbon) for stabilization/solidification of the waste shall be determined. Mixing of contaminated soil and the cement/carbon will be performed in the "mixing area". After mixing and solidification, the soil shall be sampled and analyzed for full TCLP analysis to determine if it may be disposed as non-hazardous waste. After removal of any treated soil, the floor of the "mixing" area shall be randomly sampled (four samples) for nitroaromatics to ensure that no nitroaromatic contaminated soil/water escaped from the containment area through the plastic to the ground.

The excavated area will be backfilled with clean soil from an off-site borrow area. Prior to backfilling, the borrow area soil will be analyzed for volatiles, semi-volatiles, target analyte metals, and polychlorinated biphenyls (PCBs). Analytical data from the borrow area sampling

shall be compared against EPA Region IX PRGs, EPA Region III risk based concentrations, and where available, PBOW site background levels. The backfilled area will be seeded and mulched in accordance with the Plan of Operations. Non-hazardous waste from the site will be transported to the Erie County Landfill for subsequent disposal. Hazardous solid waste, if present and untreatable, will be transported to Environmental Quality's (EQ) Wayne Disposal Landfill in Michigan for subsequent disposal.

Monitoring wells #27 and PRMW-08 shall be abandoned in accordance with Ohio state regulations and the requirements of EM 1110-1-4000, Monitoring Well Design, Installation, and Documentation at Hazardous Toxic, and Radioactive Waste Sites. The four bollard posts protecting the wells shall be removed. Care must be taken when removing the plug from the MW-27 because of a potential for pressure build-up in the well from hydrogen sulfide gas. As a safety precaution, WasteTron will ventilate the well using a venturi prior to beginning abandonment activities. The venturi will be equipped with an extension so that gases will be dispersed at a height of approximately 10 to 12 feet above grade. Additionally, the venturi shall be grounded since the emission of hydrogen sulfide may result in a potentially explosive atmosphere. Prior to grouting, the groundwater shall be purged from the well (the well has a very low recharge rate) using a 3-inch bailer to remove the black, smelly hydrogen sulfide contaminated water. Well (PRMW-08) is located within the Pentolite Red area of excavation and must be abandoned prior to the excavation of contaminated soil in the area.

The wells shall be abandoned by sealing with grout from the bottom of the well to the ground surface using a non-shrinkable mixture of bentonite and concrete grout. The bentonite and concrete grout shall be introduced into the wells by use of a tremie pipe. The tremie pipe shall be placed into the bottom of each well and the grout/bentonite mix will be pumped through it until undiluted grout flows from the well at the ground surface. The casing around each well shall be removed to a minimum depth of four feet below grade. The void created will be filled to grade with non-shrinkable grout/concrete. All tire ruts and disturbed ground will be seeded and mulched.

3.0 HAZARD/RISK ANALYSIS

3.1 Activity Hazard Analysis

Appendix A summarizes field activities that may create or contribute to a hazard and the actions that can be taken to eliminate or minimize hazards at the site. A nuclear reactor is located at PBS. This reactor is currently being decommissioned. Exposure to radiation on-site is not expected to be an issue; however, personnel must be cognizant that radioactive material is present at the PBS site and that exposure, while highly unlikely, is possible. Therefore, WasteTron Project Management must ensure that WasteTron personnel and subcontractors work only in the areas designated and that all instructions provided by the PBS security and safety personnel is strictly adhered to. WasteTron personnel and subcontractors are required by NASA to review a safety video prior to performing any on-site activities.

3.2 Chemical Hazards

The primary chemical hazards associated with these excavation activities are exposure to nitroaromatic compounds and a potential exposure to hydrogen sulfide exists for the well abandonment activities. Personnel will be potentially exposed to Portland cement and granular activated carbon, which may be used to stabilize the nitroaromatics in the soil prior to off site disposal. Additionally, personnel will be potentially exposed to products brought on the site by WasteTron for use in decontamination, soil field-testing, monitoring well abandonment, and seeding/mulching activities. Products that WasteTron might bring on-site include Tornado-50 cleaner, hexane, acetone, methanol, lime, fertilizer, and bentonite. Material Safety Data Sheets (MSDS) will be provided on-site for all chemicals used at PBOW. Sections 3.2.1 through 3.2.15 give specific information concerning the chemicals that may be encountered during this project. The following standard safety precautions shall be adhered to for this project.

- Keep work areas clean and well ventilated.
- Clean up spills quickly and carefully.
- Personnel in the work zone shall not eat, drink, smoke or apply cosmetics.
- Only personnel meeting the training requirements of 29 CFR 1910.120 may perform this work. Personnel shall, at a minimum, be wearing Level D PPE as listed in Section 5.1. If site conditions so warrant, the Project Manager/SSHO shall require personnel to upgrade to a higher level of PPE.
- Any unnecessary contact with potentially contaminated substances shall be avoided.
- No horseplay.
- No matches or lighters shall be used in the work zone.
- During activities that present a risk to personnel, the buddy system as described in Section 6.1 will be implemented.

3.2.1 Dinitrobenzene (all isomers)

Dinitrobenzene presents danger from the formation of methemoglobinemia, which is the oxidation and inactivation of hemoglobin in the blood. Some of the chemical and physical properties of dinitrobenzene are as follows:

- Dinitrobenzene has an approximate molecular weight of 168.1 g/mol.
- Dinitrobenzene is a pale white or yellow crystalline solid.
- Dinitrobenzene has a boiling point of 606 °F.
- Dinitrobenzene has a vapor pressure of less than 1 mm Hg at 68 °F.
- Dinitrobenzene has a solubility of 0.01 to 0.05 grams per 100 grams of water.
- Dinitrobenzene is incompatible with strong oxidizers, caustics, and chemically active metals such as tin or zinc.

Specific routes of exposure are:

- Skin absorption (solid, liquid, and vapor phases are readily absorbed through the skin)
- Eye contact
- Ingestion
- Inhalation

Ingestion of alcohol may cause aggravation of symptoms. Symptoms a worker may exhibit when exposed to dinitrobenzene include, but are not limited to the following:

- Eye and skin irritation
- Cyanosis
- Irritability
- Unpleasant taste or burning sensation in mouth
- Dry throat
- Reduced vision
- Jaundice
- Drowsiness
- Nausea
- Headache
- Shortness of breath
- Weakness
- Dizziness
- Anemia
- Unconsciousness

The target organs affected are:

- Eye
- Skin
- Blood
- Liver
- Central nervous system
- Cardiovascular system

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Get medical attention immediately.
- Contact lenses shall not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- If dinitrobenzene has penetrated through clothing, remove the clothing immediately and wash the skin with soap and water.
- Get medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Get medical attention immediately.

Ingestion

- If conscious, give affected person large quantities of water immediately. Induce vomiting after water consumption for conscious persons. *(Do not induce vomiting if affected person loses consciousness.)*
- Get medical attention immediately.

3.2.2 Nitrobenzene

Nitrobenzene presents danger from the formation of methemoglobinemia, which is the oxidation and inactivation of hemoglobin in the blood. Some of the chemical and physical properties of nitrobenzene is as follows:

- Nitrobenzene has a molecular weight of 123.1 g/mol.
- Nitrobenzene is a yellow, oily liquid with a pungent shoe polish odor.
- Nitrobenzene has a boiling point of 411 °F.
- Nitrobenzene has a vapor pressure of less than 1 mm Hg at 68 °F.
- Nitrobenzene has a solubility of 0.19 grams per 100 grams of water.
- Nitrobenzene is incompatible with concentrated nitric acid, nitrogen tetroxide, caustics, phosphorus pentachloride, and chemically active metals such as tin or zinc.

Specific routes of exposure are:

- Skin absorption
- Eye contact
- Ingestion
- Inhalation

Ingestion of alcohol may cause aggravation of symptoms. Symptoms a worker may exhibit when exposed to nitrobenzene include, but are not limited to the following:

- Eye and skin irritation
- Cyanosis
- Irritability

- Drowsiness
- Nausea
- Headache
- Shortness of breath
- Weakness
- Dizziness
- Unconsciousness

The target organs affected are:

- Eye
- Skin
- Blood
- Reproductive system
- Liver
- Kidneys
- Cardiovascular system

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Get medical attention immediately.
- Contact lenses shall not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- If Nitrobenzene has penetrated through clothing, remove the clothing immediately and wash the skin with soap and water.
- Get medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Get medical attention immediately.

Ingestion

- If conscious, give affected person large quantities of water immediately. Induce vomiting after water consumption for conscious persons. *(Do not induce vomiting if affected person loses consciousness.)*
- Get medical attention immediately.

3.2.3 Nitrotoluene (all isomers)

Nitrotoluene presents danger from the formation of methemoglobinemia, which is the oxidation and inactivation of hemoglobin in the blood. Some of the chemical and physical properties of nitrotoluene are as follows:

- Nitrotoluene has a molecular weight of 137.1 g/mol.
- Nitrotoluene is a yellow liquid or solid with a weak aromatic odor.
- Nitrotoluene has a boiling point of 432 °F.
- Nitrotoluene has a vapor pressure of 0.12 to 0.15 mm Hg at 68 °F.
- Nitrotoluene has a solubility of 0.04 to 0.06 grams per 100 grams of water.
- Nitrotoluene is incompatible with strong oxidizers, and sulfuric acid.

Specific routes of exposure are:

- Skin absorption
- Eye contact
- Ingestion
- Inhalation

Symptoms a worker may exhibit when exposed to nitrotoluene include, but are not limited to the following:

- Skin irritation
- Cyanosis
- Irritability
- Drowsiness
- Nausea
- Rapid pulse
- Headache
- Shortness of breath
- Heart irregularities
- Weakness
- Dizziness
- Unconsciousness

The target organs affected are:

- Skin
- Blood
- Cardiovascular system
- Central nervous system
- Gastrointestinal tract

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Get medical attention immediately.
- Contact lenses shall not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- If nitrotoluene has penetrated through clothing, remove the clothing immediately and wash the skin with soap and water.
- Get medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Get medical attention immediately.

Ingestion

- If conscious, give affected person large quantities of water immediately. Induce vomiting after water consumption for conscious persons. *(Do not induce vomiting if affected person loses consciousness.)*
- Get medical attention immediately.

3.2.4 Dinitrotoluene (DNT)

Dinitrotoluene presents danger from the formation of methemoglobinemia, which is the oxidation and inactivation of hemoglobin in the blood. Dinitrotoluene has been shown to be a carcinogen and neoplastigens in laboratory experiments with animals. Some of the chemical and physical properties of DNT are as follows:

- DNT has a molecular weight of 182.2 g/mol.
- DNT is an orange-yellow crystalline solid.

- DNT has a boiling point of 572 °F.
- DNT has a vapor pressure of 1 mm Hg at 68 °F.
- DNT has a solubility of 0.03 grams per 100 grams of water.
- DNT is incompatible with strong oxidizers, caustics, and metals such as tin and zinc.

Specific routes of exposure are:

- Skin absorption
- Eye contact
- Ingestion
- Inhalation

Symptoms a worker may exhibit when exposed to DNT include, but are not limited to the following:

- Skin irritation
- Cyanosis
- Irritability
- Drowsiness
- Nausea
- Rapid pulse
- Headache
- Shortness of breath
- Heart irregularities
- Weakness
- Dizziness
- Unconsciousness

The target organs affected are:

- Skin
- Blood
- Cardiovascular system
- Liver
- Reproductive system

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Get medical attention immediately.
- Contact lenses shall not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- If DNT has penetrated through clothing, remove the clothing immediately and wash the skin with soap and water.
- Get medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Get medical attention immediately.

Ingestion

- If conscious, give affected person large quantities of water immediately. Induce vomiting after water consumption for conscious persons. *(Do not induce vomiting if affected person loses consciousness.)*
- Get medical attention immediately.

3.2.5 2,4,6-Trinitrotoluene (TNT)

TNT presents danger from the formation of methemoglobinemia, which is the oxidation and inactivation of hemoglobin in the blood. Some of the chemical and physical properties of trinitrotoluene (TNT) are as follows:

- TNT has a molecular weight of 227.1 g/mol.
- TNT is a colorless to pale yellow, odorless solid.
- TNT has a boiling point (it explodes) of 464 °F.
- TNT has a vapor pressure of 0.053 mm Hg at 68 °F.
- TNT has a solubility of 0.013 grams per 100 grams of water.
- TNT is a Class A explosive. Rapid heating may cause an explosion.
- TNT may affect the ability of blood to carry oxygen.
- TNT is incompatible with strong oxidizers, ammonia, strong alkalies, and combustible materials.

Specific routes of exposure are:

- Skin absorption
- Eye contact
- Ingestion
- Inhalation

Symptoms a worker may exhibit when exposed to TNT include, but are not limited to the following:

- Skin irritation
- Irritation to the eyes, throat, and nose
- Jaundice (skin, hair, and nails)
- Cyanosis
- Sneezing
- Coughing
- Sore throat
- Muscular pain
- Weakness
- Drowsiness
- Shortness of breath
- Heart irregularities
- Unconsciousness
- Cataracts

The target organs affected are:

- Skin
- Eyes
- Respiratory system
- Blood
- Cardiovascular system
- Liver
- Kidneys
- Central nervous system

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Get medical attention immediately.
- Contact lenses shall not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- If contaminant has penetrated through clothing, remove the clothing immediately and wash the skin with soap and water.
- Get medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Get medical attention immediately.

Ingestion

- If conscious, give affected person large quantities of water immediately. Induce vomiting after water consumption for conscious persons. *(Do not induce vomiting if affected person loses consciousness.)*
- Get medical attention immediately.

3.2.6 Hexane

Hexane will be used for decontamination of sampling equipment. Some of the chemical and physical properties of hexane are as follows:

- Hexane is a colorless liquid with a gasoline like odor.
- Hexane has a molecular weight of 86.2.
- Hexane is a flammable liquid. It has a lower explosive limit of 1.1% and an upper explosive limit of 7.5%.

The specific routes of exposure for hexane are:

- Inhalation
- Skin absorption
- Ingestion
- Skin and/or eye contact

Symptoms a worker may exhibit when exposed to hexane include, but are not limited to the following:

- Dermatitis
- Respiratory irritation
- Muscle weakness
- Dizziness
- Headache
- Drowsiness
- Eye irritation

The target organs affected by hexane are:

- Eyes
- Skin
- Respiratory System
- Central Nervous System
- Peripheral Nervous System

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Seek medical attention immediately.
- Contact lenses shall not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- If methanol have penetrated through clothing, remove the clothing immediately and wash the skin with soap and water.
- Seek medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Seek medical attention immediately.

Ingestion

- Seek medical attention immediately.

3.2.7 Methanol

Methanol will be used for decontamination of sampling equipment. Some of the chemical and physical properties of methanol are as follows:

- Methanol is a colorless liquid with a characteristic pungent odor.
- Methanol has a molecular weight of 32.1 and a molecular formula of CH_3OH.
- Methanol is a flammable liquid. It has a lower explosive limit of 6.0% and an upper explosive limit of 36%.

The specific routes of exposure for methanol are:

- Inhalation
- Skin absorption
- Ingestion
- Skin and/or eye contact

Symptoms a worker may exhibit when exposed to methanol include, but are not limited to the following:

- Dermatitis
- Respiratory irritation
- Dizziness
- Headache
- Drowsiness
- Nausea
- Vomiting
- Eye irritation

The target organs affected by methanol are:

- Eyes
- Skin
- Respiratory System
- Central Nervous System
- Gastrointestinal tract

The OSHA permissible exposure limit (PELs) for methanol is 200 ppm. The immediately dangerous to life and health (IDLH) value for methanol is 6000 ppm.

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Seek medical attention immediately.
- Contact lenses should not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- If methanol have penetrated through clothing, remove the clothing immediately and wash the skin with soap and water.
- Seek medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Seek medical attention immediately.

Ingestion

- Seek medical attention immediately.
- Immediately give 2-4 glasses of water or milk, if conscious. Induce vomiting, if conscious.

3.2.8 Tornado-50 Cleaner

Tornado-50 cleaner is a heavy-duty multi-purpose biodegradable, alkaline cleaner that will be used to clean the equipment. Some of the chemical and physical properties of Tornado-50 cleaner are as follows:

- Tornado-50 cleaner is a green-yellow liquid.
- Tornado-50 cleaner has a boiling point of 180 °F.
- Tornado-50 cleaner is incompatible and/or reactive with acids.

Specific routes of exposure to Tornado-50 cleaner is:

- Inhalation
- Dermal absorption
- Ingestion (Do not induce vomiting, if swallowed)

Symptoms a worker may exhibit when exposed to Tornado-50 cleaner include, but are not limited to the following:

- Eye and skin irritation
- Throat and nose irritation
- Skin redness
- Dizziness

The target organs affected by Tornado-50 cleaner are:

- Eyes
- Skin
- Respiratory system

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eyelids occasionally.
- Seek medical attention immediately.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- Seek medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Seek medical attention immediately.

Ingestion

- Seek medical attention immediately.

3.2.9 Lime

Lime may be applied during re-seeding activities. Some of the chemical and physical properties of agricultural lime are as follows:

- Lime is a white powder with little if any odor.
- Lime does not have a flash point.
- Lime is incompatible and/or reactive with boric oxide, acids, fluorine, and many organic materials
- Hydrated lime is a strongly alkaline material

The specific routes of exposure for lime are:

- Inhalation
- Skin and/or eye contact
- Ingestion

Symptoms a worker may exhibit when exposed to lime include, but are not limited to the following:

- Eye and skin irritation
- Burns to the skin
- Chemical pneumonitis (if inhaled)
- Respiratory irritation
- Irritation to the digestive tract (if ingested)
- Will severely aggravate pre-existing conditions of bronchitis, emphysema and asthma

The target organs affected by lime are:

- Eyes
- Skin
- Gastrointestinal tract
- Respiratory tract

Lime does not pose any fire hazards. The OSHA permissible exposure limit (PEL) for lime is 5 mg/m^3. The American Conference of Government Industrial Hygienists (ACGIH) threshold limit values (TLV) for lime is 5 mg/m^3.

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eyelids occasionally. Wash eyes for a minimum of 15 minutes.
- Seek medical attention immediately.
- Contact lenses shall not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin with large amounts of water.
- Remove any contaminated clothing.
- Seek medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Seek medical attention immediately.

Ingestion

- Dilute by giving 2 glasses of milk or water to drink, followed by fruit juices or dilute vinegar to neutralize the alkali.
- Seek medical attention immediately.

3.2.10 Fertilizer

Fertilizer may be applied during re-seeding operations. Some of the chemical and physical properties of fertilizer are as follows:

- Fertilizer is a multi-colored granular substance with an ammonia odor.
- Fertilizer does not have a flash point.
- Fertilizer is incompatible and/or reactive with nitrates, strong alkalis, reducing agents, and active metals (such as aluminum & magnesium).

The specific routes of exposure for fertilizer are:

- Inhalation
- Skin and/or eye contact
- Ingestion

Symptoms a worker may exhibit when exposed to fertilizer include, but are not limited to the following:

- Eye and skin irritation
- Respiratory irritation
- Dermatitis
- Coughing
- Headaches
- Muscular weakness
- Irritation to the digestive tract (if ingested)
- Cyanosis
- Depression
- Inhalation of dust may aggravate existing respiratory conditions like asthma

The target organs affected by fertilizer are:

- Eyes
- Skin
- Gastrointestinal tract
- Respiratory tract
- Kidneys

Fertilizer itself is not flammable. However, fertilizer is comprised of materials, which are oxidizers in their pure, unmixed forms. Therefore, fertilizer will not burn but can provide oxygen for existing fires. OSHA has not set a permissible exposure limits (PELs) for fertilizer. The American Conference of Government Industrial Hygienists (ACGIH) has not set threshold limit values (TLV) for fertilizer.

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eyelids occasionally. Wash eyes for a minimum of 15 minutes.
- Seek medical attention immediately.
- Contact lenses shall not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin with soap and large amounts of water.
- Remove any contaminated clothing.
- Seek medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Seek medical attention immediately.

Ingestion

- Have conscious person drink 1-2 glasses of water, and then induce repeated vomit until vomit is clear. Seek medical attention immediately.
- Seek medical attention immediately.

3.2.11 Portland Cement

Portland cement will be used to stabilize/solidify the nitroaromatic contaminated soil, if it fails TCLP analysis.

- Portland cement is a light gray solid.
- Portland cement is a calcium silicate cement made with a combination of calcium, silicon, aluminum, and iron. Generally, raw materials consist of a combination of limestone, shells or chalk, shale, clay, sand, and/or iron ore.
- Portland cement has a pH of 12-13.
- Portland cement is only slightly soluble in water and has no measurable vapor density.

The specific routes of exposure for cement are:

- Inhalation
- Skin absorption
- Ingestion
- Skin and/or eye contact

Symptoms a worker may exhibit when exposed to cement include, but are not limited to the following:

- Dermatitis
- Respiratory irritation
- Skin dryness
- Eye irritation
- Nose and throat irritation

The target organs affected by cement are:

- Eyes
- Skin
- Respiratory System

There is not an OSHA PEL for cement; however, the total and respirable dust PEL would be applicable to cement. The OSHA PEL for total dust is 15 mg/m^3 and for respirable dust is 5 mg/m^3.

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Seek medical attention immediately.
- Contact lenses shall not be worn when working with cement.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- Use moisturizing creams for dry skin.
- Seek medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Seek medical attention immediately.

Ingestion

- If swallowed, DO NOT INDUCE vomiting but drink plenty of water. If vomiting occurs, keep head below hips to prevent aspiration into lungs.
- Seek medical attention immediately.

3.2.12 Acetone

Acetone will be used to extract the soil samples for the field-testing of nitroaromatics. Some of the chemical and physical properties of acetone are as follows:

- Acetone is a colorless liquid with a mint-like odor.
- Acetone has a molecular weight of 58.08.
- Acetone is a flammable liquid. It has a vapor density of 2.0 (air =1.0).
- Acetone is incompatible or reactive with concentrated nitric and sulfuric acid mixtures, oxidizing materials, chloroform, alkalis, chlorine compounds, and acids.

The specific routes of exposure for acetone are:

- Inhalation
- Skin absorption
- Ingestion
- Skin and/or eye contact

Symptoms a worker may exhibit when exposed to acetone include, but are not limited to the following:

- Dermatitis
- Respiratory irritation
- Dullness
- Dizziness
- Headache
- Eye irritation
- Unconsciousness
- Abdominal pain
- Nausea

The target organs affected by acetone are:

- Eyes
- Skin
- Respiratory System
- Central Nervous System
- Peripheral Nervous System

The OSHA PEL for acetone is 1000 ppm. The ACGHI threshold limit value for acetone is 500 ppm (TWA) and 750 STEL.

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Seek medical attention immediately.
- Contact lenses shall not be worn when working with this chemical.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- If acetone has penetrated through clothing, remove the clothing immediately and wash the skin with soap and water.
- Seek medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Seek medical attention immediately.

Ingestion

- If swallowed, vomiting may occur spontaneously, but DO NOT INDUCE vomiting. If vomiting occurs, keep head below hips to prevent aspiration into lungs.
- Seek medical attention immediately.

3.2.13 Activated Carbon

Activated carbon may be used in the stabilization/solidification of nitroaromatic-contaminated soil. Some of the chemical and physical properties of activated carbon are as follows:

- Activated carbon is a black particulate solid. If used for this project, it will be used in the powder form as opposed to using the granular or pellet form.
- Activated carbon does not have a measurable vapor pressure of vapor density.
- Wet activated carbon removes oxygen from the air; therefore, personnel shall not enter an area where activated carbon is being wetted unless sufficient ventilation (natural and/or mechanical) is available.

The specific routes of exposure for activated carbon are:

- Inhalation
- Eye contact

Symptoms a worker may exhibit when exposed to activated carbon include, but are not limited to the following:

- Eye irritation
- Respiratory irritation

The target organs affected by activated carbon are:

- Eyes
- Respiratory System

There is not an OSHA PEL for activated carbon; however, the total and respirable dust PEL would be applicable to the carbon. The OSHA PEL for total dust is 15 mg/m^3 and for respirable dust is 5 mg/m^3.

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Seek medical attention immediately.
- Contact lenses shall not be worn when working with this chemical.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Seek medical attention immediately.

3.2.14 Hydrogen Sulfide

Hydrogen sulfide is a highly toxic gas that has been detected in monitoring well #27 (MW-27). Monitoring well #27 will be abandoned as part of the work activities for this project. Some of the chemical and physical properties of hydrogen sulfide are as follows:

- Hydrogen sulfide has a molecular weight of 34.08.
- Hydrogen sulfide is a colorless, flammable gas with an offensive odor. The odor is frequently characterized as smelling like rotten eggs. *(NOTE: The sense of smell becomes rapidly deadened and cannot be relied upon to warn of the continuous presence of hydrogen sulfide).*
- Hydrogen sulfide has a boiling point of -77°F.
- Hydrogen sulfide has an upper explosive limit (UEL) of 44% and a lower explosive limit (LEL) of 4.0%.
- Hydrogen sulfide is heavier than air and may accumulate in low areas and may travel a considerable distance to an ignition source.
- Hydrogen sulfide is a poison. Exposures of 800-1000 ppm may be fatal in 30 minutes, and higher concentrations can be instantly fatal.
- Hydrogen sulfide is an irritant. Low concentrations of 20-150 ppm causes irritation to the eyes and slightly higher concentrations may cause irritation to the upper respiratory tract.
- Hydrogen sulfide is an asphyxiant. Hydrogen sulfide in very high amounts can paralyze the respiratory system.
- Hydrogen sulfide is a very dangerous fire hazard when exposed to heat, flame, or oxidizers. Also, it is a moderate explosion hazard when exposed to heat or flame.

Specific routes of exposure to hydrogen sulfide is:

- Inhalation
- Absorption through eyes and mucous membrane

Symptoms a worker may exhibit when exposed to hydrogen sulfide include, but are not limited to the following:

- Eye irritation
- Conjunctivitis
- Photophobia
- Corneal bullae

- Mucous membrane irritation
- Upper respiratory irritation
- Rhinitis
- Bronchitis
- Pulmonary edema
- Headache
- Dizziness
- Confusion
- Depression (when exposed to small concentrations)
- Excitement (when exposed to large concentrations)
- Irritability
- Gastrointestinal disturbances
- Staggering gait
- Diarrhea
- Dysuria
- Paralysis of the respiratory system
- Coma
- Death

The target organs affected by hydrogen sulfide are:

- Eyes
- Respiratory system
- Central nervous system

OSHA has set an acceptable ceiling concentration limit of 20 ppm and a 10-minute peak concentration of 50 ppm, if no other exposure to hydrogen sulfide has occurred. The IDLH value for hydrogen sulfide is 100 ppm.

Emergency First Aid procedures are:

Eye Contact

- Flush contaminated eyes with large amounts of water for at least 15 minutes and seek medical attention. (*Note: The wearing of contact lenses by personnel is strictly prohibited when the potential exists for hydrogen sulfide exposure.)*
- Obtain medical attention.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Seek medical attention immediately.

3.2.15 Bentonite Grout

Bentonite grout will be used in the abandonment on MW-27. Some of the physical and chemical properties of bentonite are as follows:

- Bentonite is an aluminate silicate, which contains crystalline silica in widely varying concentrations from less than 1% to about 24%.
- Bentonite is an odorless powder (also available in granular form) having variable color ranging from cream to gray.
- Bentonite is insoluble in water.

Specific routes of exposure to bentonite are:

- Inhalation
- Skin absorption/contact
- Ingestion

Symptoms a worker may exhibit when exposed to bentonite include, but are not limited to the following:

- Eye irritation
- Skin irritation
- Chest pain
- Shortness of breath
- Bronchitis
- Respiratory irritation
- Gastrointestinal disturbances

The target organs affected by bentonite are:

- Eyes
- Respiratory system

There is no OSHA PEL set for this compound; however the PELs for total (15 mg/m^3) and respirable (5 mg/m^3) dust are applicable.

Emergency First Aid procedures are:

Eye Contact

- Wash eyes immediately with large amounts of water, lifting the lower and upper eye lids occasionally.
- Seek medical attention immediately.
- Contact lenses shall not be worn when working with bentonite.

Skin Absorption

- Promptly wash contaminated skin using soap or a mild detergent and water.
- Use moisturizing creams for dry skin.
- Seek medical attention immediately.

Inhalation

- Immediately move exposed person to fresh air.
- If breathing has stopped, perform artificial respiration.
- Keep the affected person warm and at rest.
- Seek medical attention immediately.

Ingestion

- If swallowed, DO NOT INDUCE vomiting, but give 2-4 cups of milk or water to a conscious person. If vomiting occurs, keep head below hips to prevent aspiration into lungs.
- Seek medical attention immediately.

OSHA Permissible Exposure Limits

Table 1 contains a list of the potential chemical contaminants and their applicable OSHA permissible exposure limits (PELs). PELs are time weighted average (TWA) concentrations that must not be exceeded during any 8-hour work shift of a 40-hour workweek. An 8-hour time weighted average concentration is calculated by taking the concentration of an air contaminant and multiplying it by the duration in hours of exposure and then dividing it by 8 hours. PEL concentrations were developed for normal healthy workers exposed on the job to air contaminants. Exposures in excess of a PEL value trigger certain requirements (emission and exposure controls), depending on the particular OSHA standard being exceeded. OSHA ceiling concentrations, designated by a "C" preceding the concentration value, must not be exceeded during any part of the workday. When instantaneous monitoring is not feasible, the ceiling limit may be assessed as a 15-minute TWA exposure. PEL and ceiling concentration standards are legally enforceable air contaminant concentration limits. An acceptable peak concentration is the acceptable maximum concentration above the established ceiling concentration that is allowed during an 8-hour shift.

An Immediately Dangerous to Life and Health (IDLH) exposure condition is defined by NIOSH as a situation "that poses a threat of exposure to airborne contaminants when that exposure is likely to cause death or immediate or delayed permanent adverse health effects or prevents escape from such an environment." OSHA has established IDLH exposure concentrations for over 300 substances. OSHA's purpose in establishing IDLH values was to ensure that a worker could escape without injury or irreversible health effects from an IDLH exposure in the event of the failure of respiratory protection.

Table 1--Exposure Limits

Compound	PEL[1]	IDLH[1]
o-Dinitrobenzene	1 mg/m^3	200 mg/m^3
m-Dinitrobenzene	1 mg/m^3	200 mg/m^3
p-Dinitrobenzene	1 mg/m^3	200 mg/m^3
Nitrobenzene	1 ppm	200 ppm
Nitrotoluene	5 ppm	200 ppm
Dinitrotoluene	1.5 mg/m^3	200 mg/m^3
o-Dinitrotoluene	2 ppm	200 ppm
p-Dinitrotoluene	2 ppm	200 ppm
2,4,6-Trinitrotoluene	1.5 mg/m^3 (skin)	500 mg/m^3
Hexane	500 ppm	1100 ppm
Methanol	200 ppm	6000 ppm
Tornado-50 cleaner	N/A[2]	N/A[2]
Lime	5 mg/m^3	N/A[2]
Fertilizer	N/A[2]	N/A[2]
Acetone	1000 ppm	N/A[2]
Portland Cement	Total 15 mg/m^3, respirable 5 mg/m^3	N/A[2]
Activated carbon	Total 15 mg/m^3, respirable 5 mg/m^3	N/A[2]
Hydrogen Sulfide	20 ppm	100 pm
Bentonite	Total 15 mg/m^3, respirable 5 mg/m^3	N/A[2]

1 PEL and IDLH values were taken from the NIOSH Pocket Guide to Chemical Hazards, June 1997.
2 N/A=not applicable, there is no OSHA PEL or IDLH value for this compound
3 Level reported is based on total dust (15 mg/m^3 and respirable dust (5 mg/m^3).

3.3 Physical Hazards

Activities performed during the project present dangers from physical hazards such as strains from lifting activities, hazards from walking and working surfaces, cold/heat stress, harmful plants/animals/insects, excavation hazards, well abandonment hazards, utility hazards, noise hazards, cuts, and injury from heavy equipment use. Employee training and experience in the use of field equipment and their awareness of potential hazards will reduce risk.

3.3.1 Heavy Equipment Hazards

Heavy equipment (trucks, dozers, backhoe, end loader, etc.) operations present inherent safety hazards. Safeguards to follow when working around heavy equipment include, but are not limited to the following:

- Excavation cannot proceed until NASA PBS has issued a digging permit.
- Only qualified personnel will operate heavy machinery.
- Getting on or off of any equipment while it is in motion is prohibited.

- Machinery shall be operated in accordance with the manufacturer's recommendations.
- The use of headphones for entertainment purposes (such as radio or cassette) while operating equipment is prohibited.
- All machinery shall be inspected daily (when in use) by a competent and knowledgeable person to ensure safe operating conditions.
- Personnel shall not operate heavy equipment in areas where the utilities have not been properly marked.
- All heavy equipment shall be equipped with working audible reverse signal alarms or motion alarms.
- Personnel shall wear hearing protection when working near heavy equipment.
- Personnel shall wear safety belts and only equipment with roll over protection will be used.

Physical hazards associated with heavy equipment operations that may be encountered on this project include, but are not limited to the following:

- Sharp objects may cause cuts or punctures.
- Falls from uneven terrain or slippery surfaces may occur.
- Sprains and strains from lifting activities are possible.
- Moving vehicles may injure personnel.
- Electrical shock/electrocution hazard exist if underground or aboveground power lines are encountered.
- Noise levels may be high which are both a health hazard and a hindrance to communication.
- Field ground personnel shall not perform work near moving heavy equipment. The heavy equipment operator shall ensure that other personnel are not performing work in the area where excavation work is occurring.

Only employees with proper training and experience are permitted to operate heavy equipment.

3.3.2 Utility Lines

A digging permit must be obtained from NASA PBS prior to performing any subsurface intrusive work. Under no circumstances will intrusive work be performed in areas not pre-approved by NASA PBS. Work will not proceed until all utilities have been marked or identified by NASA PBS. Work will stop immediately if any underground utilities are detected and the NASA POC will be notified immediately.

3.3.3 Slips, Trips, and Falls

Due to the locations of this project, the walking and working surfaces present inherent dangers. Personnel will adhere to the following safety rules concerning walking and working surfaces:

- When possible, personnel will avoid walking through or working in water or mud.
- Personnel will avoid climbing over site debris or over equipment.

- Personnel shall ensure that equipment not in use will be put in a place where it will not create a tripping hazard.
- Personnel will not walk on or attempt to crawl over stockpiles.
- Personnel will not walk or stand near the edges of the excavation areas.
- Personnel will be careful when walking in heavily vegetated areas. They will avoid traveling in the heavily vegetated areas whenever possible.

3.3.4 Lifting Techniques

Lifting and moving equipment improperly can place a great deal of stress on the back possibly resulting in severe injury. Lifting objects is inherent in performing field investigations; therefore, it is important to use good lifting techniques. Personnel shall adhere to the following basic rules when performing work that requires lifting:

- If a load is heavy or bulky, get help
- Remember to lift with your legs and keep your back straight.
- Keep the load as close to your body as you can.
- Do not jerk the load. Lift slowly and carefully.
- Make sure the area you will be carrying the load through is clear of obstacles.
- Do not twist or turn your spine when lifting or carrying the load.
- Be sure to have a good grip on your load at all times.
- Be careful when lowering your load (get help, if necessary).

Proper lifting techniques and back injury prevention techniques are addressed during annual safety training for WasteTron personnel. Field personnel shall review the above rules for proper lifting prior to beginning fieldwork.

3.3.5 Inclement Weather Conditions

Work shall not be scheduled when inclement weather (heavy rains, strong winds, tornado, floods, extreme temperatures, and so forth) is predicted that could cause or contribute to an accident or exposure incident. If a change in the weather poses a health or environmental threat, the site shall be secured, and work shall cease. Extremes in temperature can pose serious physical hazards to personnel. Personnel shall be aware of appropriate steps that can be taken to minimize the effects of temperature extremes.

3.3.5.1 Heat Stress

Personnel who work outdoors during the summer to early fall months may be subject to heat stress. Heat stress may occur when protective clothing decreases natural body ventilation and/or when working in areas having elevated temperatures. The heat stress work/rest standards as outlined in the heat stress section of the 1996 ACGIH Threshold Limit Values (TLV) & Biological Exposure Indices (BEI) Handbook, and Section 6 of the EM 385-1-1 Safety and Health Requirement Manual will be followed.

Heat stress is any series of conditions where the body is under stress from overheating. It can include heat cramps, heat exhaustion, heat rash, or heat stroke. The victim often overlooks the signs of heat stress. The employee may at first be confused or unable to concentrate. Heat stress can produce bodily symptoms, which may include profuse sweating, dizziness, cessation of sweating, and collapse. Refer to the following table for common forms of heat stress.

Table 2--Heat Stress

Condition	Signs/Symptoms	First Aid
Heat cramps	Heavy sweating Painful muscle spasms	Sport drink intake (Gatorade) Rest in cool environment Salt water intake (0.5% solution)
Heat Syncope	Brief fainting Blurred vision	Water intake Lie down in cool environment
Dehydration	Fatigue and reduced movement	Fluid and salted food intake
Heat Exhaustion	Pale and clammy skin, possible fainting, weakness, fatigue, nausea, dizziness, heavy sweating, blurred vision, body temperature slightly elevated	Lie down in cool environment, water intake, loosen clothing
Heat Stroke	Skin hot and dry, red face, high body temperature, unconsciousness, collapse, convulsions, confusion or erratic behavior	Immediate total cooling Transport to hospital

The following precautions will be taken to prevent injury from heat stress:

- The work schedule will be adjusted, if possible, to schedule heavy work during the cooler part of the day.
- The work will be paced to include adequate rest periods. Five to fifteen minute rest periods will be scheduled hourly or every 2 hours depending upon the workload, temperature, and relative humidity. The frequency and time of rest periods will be increased, if the SSHO believes that it is necessary to protect the workers' safety.
- Drinking water and ice will be provided in the clean zone. Personnel will be encouraged to drink plenty of water.
- The weather conditions shall be monitored and work halted if the temperature (including humidity) rises to levels that present a danger to worker safety.

3.3.5.2 Cold Stress

Personnel who work outdoors during winter months are subject to cold stress. Exposure to extreme cold can result in severe injury or even death. Areas of the body that are most susceptible to the effects of cold stress are the fingers, toes, nose, and ears. The cold stress

management requirements as outlined in Section 6 of the EM 385-1-1 Safety and Health Requirement Manual will be followed. Precautions a worker may take to prevent injury from the cold includes, but is not limited to the following:

- Extremities shall be protected from extreme cold by protective clothing.
- The work area shall be shielded or employees shall be given an outer windbreak garment when the wind chill is a factor during field operations.
- Outer garments must provide ventilation to prevent wetting of inner clothing by sweat.
- Employees who are prone to getting their clothing wet shall be issued an outer protective garment that is water repellent.
- The weather conditions shall be monitored and work halted if the temperature drops to levels that present a danger to worker safety.

3.3.6 Noise

Noise may be generated when heavy equipment (trucks, backhoes, drilling rig, and so forth) is used. Hearing protection is mandatory when working in areas where the noise levels exceed 85-dBA steady state or 120-dBA impulse.

3.3.7 Harmful Plants, Animals, and Insects

Personnel working in the field must be aware of the physical hazards posed by coming into contact with harmful plants, animals, and insects. Of the potential exposures to plants presented by this group, field personnel are likely to be most affected by exposure to poison ivy and poison oak, which are very common in this area. Both of these plants have greenish white flowers with berries that grow in clusters. The leaves are composed of three (3) leaflets each. These plants can cause a severe rash, which is characterized by redness, blisters, swelling, intense burning and itching. If these plants are required to be removed from the work area, precautions shall be taken and appropriate clothing shall be worn to prevent inspectors from dermal contact with these plants.

Copperheads (Northern Copperhead) and rattlesnakes (Eastern Massasauga) are the predominant poisonous species of snakes in Ohio. Rattlesnakes have horny sheaths towards the end of the tail, which make a rattling sound. Copperheads are brown in color with a V-shaped head characteristic of poisonous snakes.

Mosquitoes, ticks, chiggers, and bees are likely to be encountered during the work being performed under this SOW. Personnel shall take care to avoid these stinging/biting insects. The following steps shall be considered in preventing these hazards.

- Field personnel are required on this project to wear personal protective equipment (PPE) at all times while in the work zone. This should be helpful in limiting skin exposure to harmful plants and insects.

- Insect repellants may not be used when sampling for nitroaromatics because they can interfere and cause false hits in subsequent analysis.
- A 16-unit first aid kit shall be available at the site and shall contain a variety of ointments for skin afflictions.
- Water and soap shall be provided on-site for personnel to wash affected skin areas.
- Personnel shall report all known allergies to plants, insects, and medication to the Project Manager and SSHO prior to work.

3.3.8 Excavation Hazards

WasteTron will be performing excavation in thirty areas. A long reach excavator will be used to excavate the contaminated soil. The following safety precautions shall be adhered for excavation activities:

- Areas being excavated to a depth of 4 feet or more required sloped sides of 1:1.5, if personnel will be later entering the excavation. WasteTron does not anticipate entering the excavation pit for sampling purposes. Samples of the walls and floor of all of the pits will be collected out of the backhoe bucket, which will be swung around away from the excavation area to prevent personnel from accidentally falling into the pit.
- Personnel shall not work or pass under or ride in the buckets or booms of loaders in operation.
- Equipment shall not be parked or operated within 10 feet of any excavation. Additionally, soil or debris will not be stockpiled within 10 feet of the perimeter of the excavation area.
- Personnel are not allowed to work under raised loads.
- Personnel are required to stand away from the equipment being loaded or unloaded.
- Personnel are not to enter any excavation that is 4 feet or more in depth.
- Personnel shall not enter any excavation area that has obvious infiltration of water, regardless of depth.
- Safety fencing will be erected at a minimum distance around the perimeter of the pit at a minimum of ten feet from the edge of the excavation pit.
- Excavation areas shall be inspected daily while personnel are working in the area and then twice weekly until the pits are backfilled. Furthermore, the excavation areas shall be inspected after measurable amounts of rainfall.

3.3.9 Cuts

Materials with sharp edges are likely to be encountered and may pose a potential cutting hazard. Preventative measures shall be taken to prevent cuts and scrapes. Personnel shall wear leather gloves to protect them from potential cuts whenever possible.

A 16-unit first aid kit will be available on-site in the event personnel are cut. Cut areas will be decontaminated and first aid rendered. If personnel are cut, they will be taken to the hospital for a tetanus shot if they have not recently had one.

3.3.10 Drilling Rig Hazards

A drilling rig will be used to abandon the monitoring well #27 (MW-27). The use of the drilling rig presents inherent safety hazards. The following safety precautions shall be adhered to for this project:

- The NASA POC will be notified of the intent to overdrill the monitoring well to a maximum depth of two feet so a decision can be made on whether WasteTron must apply for a digging permit for the monitoring well abandonment activities.
- Only designated qualified personnel will operate the drilling rig.
- A vehicle (drilling rig) inspection checklist shall be completed daily prior to the equipment being used for the day.
- The area where the drilling rig will be used shall be visually inspected for signs of utilities (both overhead and underground). Overhead electric lines may require de-energizing if there exists a potential for hitting the lines. For this project, at least the minimum clearance from energized overhead electric lines as cited in Table 11-3 of the USACE Safety and Health Requirements Manual will be adhered to. For reference, the clearance levels given in Table 11-3 are as follows:

Table 3 – Clearance Levels for Electrical Lines

Nominal System Voltage	Minimum Rated Clearance
0 to 50 kilovolts (kV)	3 meters (m)
51 to 200 kV	4.5 m
201 to 300 kV	6 m
301 to 500 kV	7.5 m
501 to 750 kV	10.5 m
751 to 1000 kV	13.5 m

- The derrick shall be lowered and secured before the drilling rig is moved.
- When the drilling rig is moved to another location, the rig shall be made level and the brake set.
- When moving the drilling rig up or down steep grades, travel directly downhill or uphill. The equipment operator shall avoid traveling at angles because the center of gravity of the rig or truck could shift causing an accident.
- Whenever overhead or lateral clearance is restricted, a "spotter" shall be used.
- The drilling rig shall not be left unattended when it is running or idling.
- Maintenance activities and/or refueling activities are not allowed when the equipment is running.
- The hydraulic lines must be inspected periodically for signs of leaks.
- Personnel shall stand clear of the auger or rod during rotation.
- Personnel shall never clean the auger flight with their hands while the auger is rotating.
- Personnel shall be clear of all moving parts prior to performing auguring or boring activities.
- When performing decontamination activities, personnel shall wear appropriate PPE as required by Section 5.1 of this plan.
- The steam cleaner shall be inspected prior to performing decontamination activities.

- Personnel shall never point the wand toward their body or another person when the steam cleaner is in use.
- Items shall not be hoisted overhead of personnel.
- Hoist cable shall be inspected daily before use for loose connectors, frayed cable, knicks, or heavy corrosion.

3.4 Accident Prevention

WasteTron is committed to ensuring the safety of its employees, contractors, and visitors. The company believes that occupational injuries and illnesses can be prevented, that exposures to hazardous materials and hazardous work situations can be controlled, and that prevention of injuries and illnesses are equal in importance to production, quality, cost and morale. For this reason, WasteTron has established a Safety & Health Plan complete with annual refresher training, monthly safety meetings, and "tailgate" safety meetings prior to each job. Before each new phase of a job, a safety meeting is to be held to review the activity hazard analysis for that specific job. The Activity Hazard Analysis for this project can be found in Appendix A. The hazard analysis provides a description of potential hazards and the actions to be taken to eliminate or minimize each of these hazards.

4.0 CONTRACTOR PROJECT ORGANIZATION AND TRAINING

4.1 Project Organization

A project that is properly organized with personnel responsibilities well-delineated results in a successful project conclusion. A listing of functional areas and qualified personnel are given for this project.

A. **Government Technical POC** —This is the technical point of contact (POC) representing the USACE who will serve as a liaison between the USACE and the contractor.

USACE POC	Phone Number
Lisa Humphreys	(304) 529-5953

B. **NASA POC**— This is the technical point of contact (POC) representing NASA.

NASA POC	Phone Number
Robert Lallier	(419) 621-3234

C. **Contractor's Project Manager** – WasteTron's Project Manager provides technical insight and provides supervision for the project. The Project Manager has overall responsibility to see that the project is completed in accordance with the Scope of Work. Also, the Project Manager is responsible to ensure that all field documentation is completed and submitted to WasteTron's Poca office for generation of a project report.

WasteTron Inc. Project Manager		Phone Number
Steve Arbogast		(304) 755-8448
	Cellular phone	(304) 389-9580

D. **On-Site Supervisor**—The On-Site Supervisor will be in charge of field activities when the Project Manager is away from the site. It is anticipated that the Project Manager will be on-site for the majority of the project.

On-Site Supervisor		Phone Number
Malcolm Slone		(304) 755-8448
	Cellular phone	(304) 633-2373

E. **Site Safety and Health Officer (SSHO)** – This person is responsible for safety on site. A resume for the SSHO is included in Appendix B with the training certificates. The SSHO is an employee of Pinnacle Environmental, a company specializing in safety and health issues. The SSHO is responsible for ensuring that daily safety meetings are held and safety records are kept.

SSHO	Phone Number
Andrea Thomas	(304) 757-5204

F. **QC Officer**—This person is responsible for quality control (QC) at the site. This person has the authority to stop the work if QC is not being met. The QC officer is responsible for completing daily QC reports and ensuring that work is performed in accordance with the Quality Control Plan.

WasteTron QC Officer	Phone Number
Senah Gussler	(304) 755-8448

G. **Field Personnel** – These personnel are responsible for assisting the Project Manager in completing the tasks required under this contract.

WasteTron Field Personnel	Phone Number
Travis Engle	(304) 755-8448
Gary Henry	
Lynn Moles	
Chester Porter	
Malcolm Slone	
Dwayne James	

H. **WasteTron's Independent Quality Control Team--** An internal quality control team will independently review the work plans and reports to ensure that they meet requirements of the Scope of Work.

WasteTron Independent Quality Control Team	Phone Number
David Beam	(740) 574-6144
Joseph Wheeler	(304) 755-8448

I. **REIC Laboratory**–Samples will be sent to the following USACE certified laboratory. REIC Laboratory is located in Beaver, West Virginia.

REIC Contact	Phone Number
Grant Wilton	(800) 999-0105

J. **Disposal Facility for Contaminated Soil—** Non-hazardous soil removed from the site will be disposed of at the Erie County Landfill.

Erie County Landfill	Phone Number
Fred Dobbert	(419) 433-3624

K. **Barnes Nursery**—This company may be used for the transportation of any non-hazardous materials removed from the site and may be used to transport clean backfill material to the site.

Barnes Nursery Contact	Phone Number
Leslie Morgan	(800) 421-8722

L. **Mountain State**—Personnel from Mountain State will perform a survey of the 30 areas to be excavated.

Mountain State Contact	Phone Number
Jim Young	(304) 949-4762

M. **Dart Trucking**— In the event that some of the soil does not pass the TCLP test for disposal at the Erie County Landfill then Dart Trucking will be responsible for the transportation of material to EQ Environmental located in Michigan.

Dart Trucking Contact	Phone Number
Bill McCluskey	(800) 541-8206 Extension 192

N. **EQ Environmental**—The hazardous disposal facility for the contaminated soil is EQ Environmental located in Michigan.

EQ Environmental Contact	Phone Number
Debbie Chamberlain	(800) 592-5489

O. **Enviro-Clean Inc.**—Non-hazardous investigation derived waste (IDW) containing liquids will be transported to Enviro-Clean Inc. located in Wooster, Ohio for ultimate disposal.

Enviro-Clean Inc.	Phone Number
Robert Jarrett	(330) 264-8080

P. **Eco First**—This company will be responsible for the transportation of any drums (small quantities) of hazardous IDW to EQ Environmental for disposal.

Eco First Contact	Phone Number
Dana Tomes	(304) 736-7303

Q. **Belasco Drilling Services**- Personnel from this company will perform abandonment activities for MW #27. Mr. Guyer is the contact person, but he will not be on-site.

Driller Contact	Phone Number
Scott Guyer	(614-252-2511)
Shane Congrove	
Kevin Little	

4.2 Training

All field personnel performing soil treatment and/or intrusive work on this project have received forty (40) hour hazardous waste operations and emergency response (HAZWOPER) training and 8 hour updates as appropriate. All field personnel performing soil treatment and/or intrusive work meet the training requirements as cited in 29 CFR 1910.120. At least two personnel at each work site will have received first aid and cardiopulmonary resuscitation (CPR) training. Appendix B contains copies of all training certifications and dates of refresher training for employees that may work on this project.

4.2.1 Site Specific Training

All field personnel shall receive training and guidance concerning the provisions of this SSHP. Training will specifically address the activities, procedures, equipment, and hazard analysis for site operations. This training will allow personnel to ask questions, clarify misunderstandings, and reinforce their previous safety and health training.

4.2.2 Safety Meetings

In general, company safety meetings are conducted at least weekly for all personnel and monthly for supervisors. Field personnel shall be briefed by the Project Manager or SSHO prior to daily field operations, and on an as needed basis. The Project Manager/SSHO shall hold daily "tailgate" safety meetings. Before each new phase of a job, a safety meeting is to be held to review the activity hazard analysis for that specific job. Additional briefings will be performed when work practices change, if site conditions change, or if a deficiency has been found. The SSHO or the Project Manager conducting the meeting shall record the following information on a Daily Safety Meeting form. A copy of this form is located in Appendix C. This form, to be filled out daily and signed by the SSHO or Project Manager, will include the following:

- All personnel attending the safety meeting
- The date of the safety meeting
- Topics discussed in the safety meeting

- Discussion of work conditions and task expected to be completed that day
- Personnel comments and Project Manager / SSHO notes concerning the meeting
- The Project Manager / SSHO shall record any safety related incidents noticed by field personnel

4.2.3 CPR and First Aid

WasteTron Inc. field personnel have received first aid and CPR training that meets course requirements as set forth by the American Red Cross and/or American Heart Association. Appendix B contains copies of field personnel's first aid and CPR certifications. At a minimum, two employees with CPR and first aid certifications will be on-site at all times.

5.0 SAFETY PROCEDURES/PPE PROGRAM

5.1 Personal Protective Equipment (PPE)

Personnel will wear protective equipment meeting appropriate American National Standards Institute (ANSI) requirements when their activities involve known or suspected contaminated materials. Level D PPE will be used for all site activities with a possible upgrade to Level C.

Level D PPE will consist of:

- Steel-toed safety shoes/boots
- Safety glasses with side shields
- Leather gloves (general site work)
- Chemical resistant inner/outer gloves (used when performing sampling, decontamination activities, well abandonment, and running screening tests)
- Hard hat
- Hearing protection (when working around heavy equipment)
- Long trousers and sleeved shirt

Level C PPE will consist of:

- Tyvek overalls
- Full Face or Half-face air purifying respirator (NIOSH approved which meets OSHA and USACE requirements)
- Safety glasses with side shield must be worn under a face shield, if one is used
- Appropriate chemical cartridges as determined by the on-site SSHO (acid gas and respirable dust cartridges may be necessary when performing well abandonment activities and/or soil excavation/stabilization activities)
- Chemical resistant inner and outer work gloves
- Steel-toed safety boots/shoes
- Face shield or safety glasses with side shields to be used with half-faced respirator
- Hard hat

Appendix C contains a sample PPE inspection form. These inspection forms will be included in the daily safety inspection logs.

5.1.1 Respiratory Protection

Level D personal protective equipment (PPE) will be used for this project with the possibility of an upgrade to Level C PPE. Any employee may request the use of respiratory protection, even if site conditions do not warrant its use. The following information is provided for personnel using respirators.

Fitting a Respirator

Any respirator that does not fit properly can allow contaminants to slip through cracks and between the facepiece and the skin. The negative-pressure and the positive-pressure fit tests shall always be performed just before entering any hazardous atmosphere.

To perform the negative-pressure fit test:

- Place your palms over the inhalation inlets.
- Inhale gently so the facepiece collapses slightly.
- Hold your breath for about ten seconds.
- If the facepiece holds the suction inside and no leaks are felt, the respirator fits well.

To perform the positive-pressure fit test:

- Block off the exhalation valve.
- Blow outward gently and hold for about ten seconds.
- If the positive pressure is maintained and no leaking is felt, you have a good fit.

Respirator Inspection

Personnel shall inspect their respirator before and after each use. Personnel shall inspect for:

- Holes in filters
- Loss of elasticity or tears in straps and hoses
- Broken or loose connectors and fittings
- Cracks or scratches on the facepiece
- Detergent residue or dirt on valves
- General cleanliness

Respirator Cleaning and Storage

Personnel shall clean and disinfect their respirator after each use. The following is an acceptable cleaning procedure:

- Remove filters, screens, and headbands
- Scrub the respirator in detergent and warm water
- Rinse the respirator and treat it with disinfectant
- Rinse the respirator again, making sure to remove all detergent and disinfectant

- Air-dry the respirator
- Do not dry rubber parts under heat or sunlight
- Never use solvents to clean plastic or rubber
- Respirators must be stored away from dust, sunlight, heat, cold, moisture, and chemicals
- Respirators shall be placed in individual plastic bags and sealed

Selection of Respirator Canisters/Filters

Personnel wishing to use respirators shall seek the advice of the SSHO on which canister would be most appropriate for the site conditions. Respirator selection takes into account health and safety factors, such as nature of hazard, intended use and limitations of respiratory protective devices, movement and work-rate limitations. Since there exists a potential for unknown contaminants, it is possible that a change in respirator cartridge selection may occur if additional information would become available. Each respirator canister is painted a distinctive color or combination of colors as indicated by Table 4 below:

Table 4--Respirator Canisters

Atmospheric Contaminants	**Colors Assigned**[1]
Acid gases	White
Chlorine gas	White with 1/2-inch yellow stripe completely around the canister near the bottom
Organic vapors	Black
Ammonia gas	Green
Acid gases and ammonia gas	Green with 1/2-inch white stripe completely around the canister near the bottom
Acid gases and organic vapors	Yellow
Hydrocyanic acid gas and chloropicrin vapor	Yellow with 1/2-inch blue stripe completely around the canister near the bottom.
Acid gases, organic vapors, and ammonia	Brown
Radioactive materials, excepting tritium and noble gases	Purple (magenta)
Particulates (dusts, fumes, mists, fogs, or smokes) in combination with any of the above gases or vapors.	Canister color for contaminant, as designated above, with 1/2-inch gray stripe completely around the canister near the top.
All of the above atmospheric contaminants	Red with 1/2-inch gray stripe completely around the canister top.

[1] Gray shall not be assigned as the main color for a canister designed to remove acids or vapors.

Note: Orange shall be used as a complete body, or stripe color to represent gases not included in this table. The user will need to refer to the canister label to determine the degree of protection the canister will afford.

Personnel wearing respirators must adhere to the respiratory protection program established by WasteTron. This program requires annual pulmonary function tests, x-rays, and fit testing. WasteTron requires personnel to have a fit test for each brand and type of respirator that they will use. Currently, WasteTron personnel have been issued 3M model 7800 full-face respirators, 3M model 6200 and 6300 half-face respirators.

5.2 Air Monitoring

Hydrogen sulfide shall be monitored during the well abandonment activities to ensure that levels do not exceed the PEL (20 ppm) or IDLH (100 ppm) values. Hydrogen sulfide has an upper explosive limit (UEL) of 44% and a lower explosive limit (LEL) of 4.0%. WasteTron shall utilize a GasTech 402 to monitor both hydrogen sulfide and explosive levels during abandonment activities. As a safety precaution, WasteTron will ventilate the well using a venturi prior to beginning abandonment activities. The venturi will be equipped with an extension so that gases will be dispersed at a height of approximately 10 to 12 feet above grade. Additionally, the venturi shall be grounded since the emission of hydrogen sulfide may result in a potentially explosive atmosphere.

5.3 Safety Equipment

There shall be at minimum two fire extinguishers, a portable eyewash station, a 16-unit first aid kit, and personnel decontamination materials. The On-site Supervisor/ SSHO/ will perform a daily check to assure that the safety equipment is present and in good working condition. Appendix C contains a copy of the safety equipment checklist to be used.

5.4 Medical Surveillance Program

WasteTron field personnel undergo annual medical surveillance examinations and random drug testing. Appendix D contains a brief medical data sheet that all WasteTron Inc., personnel working on-site will complete. A description of the employee medical monitoring program is located in Appendix D.

5.5 Standard Orders for Work Zone

All field sampling will be performed using the level of protection described in Section 5.1 of this SSHP. General safety procedures to be followed by all field personnel are:

- All workers and visitors entering the exclusion zone shall sign that they have read and will comply with the SSHP.
- All site workers and visitors shall follow the contents of this SSHP.
- All visitors to the site must sign in with the Project Manager/SSHO.
- Personnel will not be allowed to work on-site during periods of inclement weather that would endanger their lives.
- Personnel in the work zone shall not eat, drink, smoke, or apply cosmetics.
- Any unnecessary contact with potentially contaminated substances shall be avoided.
- No horseplay

- Only personnel meeting the training requirements of 29 CFR 1910.120 may enter into the exclusion zone. Personnel shall adhere to the PPE requirements as listed in Section 5.1. If site conditions so warrant, the Project Manager/SSHO may require personnel to change their level of PPE.
- No matches or lighters shall be used in the work zone.
- During activities that present a risk to personnel, the buddy system as described in section 6.1 will be implemented.

5.6 Illumination

Work will be performed during daylight hours only.

5.7 Sanitation

An office trailer will be set-up on-site and sanitary requirements for water and toilet facilities will be provided. Potable water will be properly labeled and disposable cups will be available for personnel use. A receptacle for disposal of cups shall be available. Washing facilities for decontamination will be available on-site.

6.0 SITE CONTROL MEASURES

Site control is an essential component in the implementation of the site-specific safety and health program. This section defines the procedures for maintaining site control. Personnel shall isolate the work area to prevent public access. Personnel may use tape or other barrier guards to prevent unauthorized persons from wandering into a work area.

6.1 Buddy System

When conditions present a risk to personnel, the implementation of the buddy system is mandatory. A buddy system requires that at least two people work as a team; each looking out for the other. People utilizing the buddy system are required to use the same level of PPE. All site activities require the use of the buddy system.

6.2 Site Communication Plan

Successful communications between field personnel and support personnel is essential. The following hand signals shall be used during field activities at the site.

Distress Signals	Definition
Hands clutching throat	Out of air/cannot breath
Hands on top of head	Need assistance
Thumbs up	OK/I am all right/ I understand
Thumbs down	No/Negative
Arms waving upright	Send backup support
Grip partners wrist	Exit area immediately

Construction Operation Signals	Definition
Thumbs up	Lifting object/moving bucket upward
Thumbs down	Lowering object/moving bucket down
Pointing toward eyes	Watch out
Pointing towards a direction	Move in that direction
Operator beeping horn without moving	Operator needs laborer's attention

In the event of an emergency, the signal for personnel to evacuate will be by sounding three blasts on a vehicle horn. If this occurs, personnel shall stop work immediately, evacuate the site and report to a predetermined offsite location so that all personnel may be accounted for. All personnel shall proceed with their buddy to a safe distance from the work area. Personnel will remain in the predetermined safe meeting area until the Project Manager provides them with further instructions.

7.0 DECONTAMINATION PLAN

All personnel and equipment exiting the work zone shall go through decontamination procedures. These procedures may be modified to suit site conditions and protective ensembles in use.

7.1 Personnel Decontamination

Decontamination involves the controlled removal of contaminants. All site personnel shall minimize contact with contaminants in order to minimize the need for extensive decontamination procedures. Personnel shall wear a disposable suit and booties when they are likely to come into contact with contaminants. The general procedures for personnel decontamination for this project is as follows:

The procedures for personnel decontamination for Level D PPE used for this project are as follows:

- **Equipment drop**
  The equipment drop is located as you enter the decontamination zone. Personnel will place all equipment here for later decontamination. Equipment shall be deposited on plastic or in plastic lined containers for subsequent cleaning.

- **Leather Boot Wash/Rinse**
  Remove gross contamination with scraper or brush. Wash boots with water and detergent and rinse with water.

- **Glove Wash/Rinse**
  Scrub gloves with detergent and water. Rinse off gloves with copious amounts of water.

- **Glove Removal**
  Remove gloves.

- **Field wash**
  Soap, water, and towels will be available for field washing. Wash hands and face with soap and water. Rinse with copious amounts of water.

The procedures for personnel decontamination for Level C PPE used for this project are as follows:

- **Equipment drop**
  The equipment drop is located as you enter the decontamination zone. Personnel will place all equipment here for later decontamination. Equipment shall be deposited on plastic drop cloths or in plastic lined containers for subsequent cleaning.

- **Boot Cover/Outer Glove/Safety Suit Removal**
  Remove foot cover, outer gloves, and safety suit and deposit them in a plastic container or a plastic lined container that has been designated for potentially contaminated PPE.

- **Inner Glove Wash/Rinse**
  Wash inner gloves with detergent and water. Rinse off gloves with copious amounts of water.

- **Facepiece Removal**
  Remove facepiece. Avoid touching face with gloves. Deposit facepiece in container with plastic liner for subsequent cleaning.

- **Inner Glove Removal**
  Remove inner gloves and deposit in a plastic container or a plastic lined container that has been designated for potentially contaminated PPE.

- **Field wash**
  Soap, water, and towels will be available for field washing. Wash hands and face with soap and water. Rinse with copious amounts of water.

7.2 Equipment Decontamination

Stainless steel sampling spoons/trowels, a stainless steel mixing bowl, and a backhoe bucket will be used for sampling. Laboratory equipment (pipets, cuvettes, beakers, and so forth), as appropriate, associated with the field screening will be decontaminated. Also, the stainless steel sampling spoons/trowels, mixing bowl, and backhoe bucket will require decontamination.

Stainless steel sampling spoons/trowels will be used to collect samples from the backhoe bucket for the field screening tests and the confirmation sampling. A mixing bowl may be used for sample compositing prior to performing field screening tests.

All non-disposable sampling equipment will be thoroughly cleaned. Decontamination of all of the sampling equipment will be accomplished prior to and between sampling. All decontamination activities for the backhoe bucket will be set up at a temporary decontamination pad. The steps of the decontamination process for the backhoe bucket will be as follows:

- Brush off the backhoe bucket to remove gross contamination
- Wash equipment with soap and water
- Rinse equipment with distilled water

Refer to Table 5 for general decontamination procedures for sampling equipment that will be reused at the site.

Table 5--Decontamination Procedures

Parameter	Detergent Wash	Tap Water Rinse	Inorganic Desorbing Agents	Tap Water Rinse	Organic Desorbing Agents	Deionized Water Rinse	Air Dry
Volatile organic compounds (VOCs)	yes	yes	no	no	Methanol	yes	yes
Nitroaromatics	yes	yes	no	no	Hexane	yes	yes
Semi-volatile organic compounds (SVOCs)	yes	yes	no	no	Hexane	yes	yes
Polychlorinated biphenyls (PCBs)	yes	yes	no	no	Hexane	yes	yes
Metals[1]	yes	yes	no	no	no	yes	yes
pH	yes	yes	no	no	no	yes	yes
Flashpoint	yes	yes	no	no	no	yes	yes
Paint Filter Test	yes	yes	no	no	no	yes	yes

1 No inorganic desorbing agents (hydrochloric acid or nitric acid) will be used for the TCLP metals since we are not looking for trace levels and we will use plastic or stainless steel sampling equipment.

In cases of gross contamination on sampling equipment, a tap water wash may first be performed to remove clumps of dirt in order to make the detergent wash more effective. The detergent wash shall be a non-phosphate detergent solution, which will be used with brushing or circulating techniques to remove gross contamination. Potable tap water will be used as a rinse for the equipment. A solvent rinse using hexane will be used as an organic desorbing agent. The analytical laboratory performing the analysis shall be consulted prior to sampling to ensure that decontamination procedures do not affect the subsequent analysis. It is recommended that all solvent rinses be made from an appropriate grade of chemical, such as pesticide or purge-and-trap grade quality. A triple rinse with deionized organic-free water shall follow all other decontamination reagents.

All rinsates will be collected and properly disposed. Drums, buckets, water, detergent, and brushes will be located in the work area. Drums will be available for containerizing the decontamination waste.

7.3 Investigation Derived Waste (IDW)

Personnel shall wear appropriate PPE when drumming IDW. WasteTron shall collect any used PPE, decontamination liquids, waste from field test kits, and all waste/media generated from the investigation activities. This media shall be containerized and placed in the most secure on-site area available until the results of the analyses are known. Potentially contaminated media shall remain on the site from which it was used/extracted and may not be combined with potentially contaminated media from another site. All drums containers shall be labeled as to project name, contents, and date of collection. The drums shall be secured with tarps and ropes and placed on pallets. WasteTron will be responsible for laboratory analyses and proper disposal of the IDW in accordance with applicable state and federal laws. All manifest will be provided to the USACE for signature prior to disposal. The USACE will be provided with copies of documentation showing disposal, which will include manifest (hazardous or non-hazardous) and waste characterization profiles.

8.0 EMERGENCY RESPONSE AND CONTINGENCY PLAN

This section describes contingencies and emergency planning procedures to be implemented at the site. The provisions of this emergency response plan will be reviewed with all field personnel prior to beginning work at the site. NASA PBS protocol must be followed during emergency response activities. WasteTron personnel and subcontractors are required by NASA to review a safety video and orientation prior to performing any on-site activities. Field personnel are to contact the main gate and the guards will make all other contacts for emergency response.

8.1 Pre-Emergency Planning

Field personnel will be briefed concerning emergency response procedures, contingency plans, lines of authority as well as their role in the plan. The plan will be reviewed and revised, if necessary, on a regular basis by the SSHO and/or the Project Manager. This will ensure that the plan is adequate and consistent with site conditions.

8.2 Personnel Roles and Lines of Authority

The SSHO has the primary responsibility for responding to and correcting emergency situations. This includes taking appropriate measures to ensure the safety of site personnel, visitors, and the public. Possible actions may involve evacuation of personnel from the site area. The SSHO is additionally responsible for ensuring that corrective measures have been implemented and that the NASA PBS authorities have been notified. The Project Manager shall allow the NASA PBS personnel to contact outside emergency personnel unless authorized otherwise. A follow-up report concerning any emergency activities and corrective action shall be submitted to the NASA PBS. The Project Manager/SSHO has the authority to stop work in cases of an emergency. The SSHO and/or the Project Manager will direct responses to any medical emergency. All personnel are responsible for reporting potential safety hazards and shall assist the SSHO and/or Project Manager within the scope of their training and knowledge.

8.3 Emergency Recognition

Personnel will be familiar with techniques of hazard recognition from pre-assignment training and site specific briefings. Emergency situations include, but are not limited to, chemical release, fire, serious injury or illness. Conditions that may lead to such events will be identified and preventive measures will be implemented prior to an emergency occurring. The SSHO and/or the On-site Supervisor will brief the personnel concerning the hazard assessment associated with this project.

8.4 Evacuation Procedures

In the event of an emergency, the signal for personnel to evacuate will be by sounding three blasts on a vehicle horn. If this occurs, personnel shall stop work immediately, evacuate the site and report to a predetermined offsite location so that all personnel may be accounted for. Personnel will be expected to proceed with their buddy to a safe distance from the work area. Personnel will remain in the predetermined safe meeting area until the SSHO and/or the On-site Supervisor provides them with further instructions. Appendix E contains a map showing the route to the nearest hospital and the general routes of evacuation from the project area.

8.5 Emergency Contacts

In the event of a medical emergency, the Project Manager will notify the appropriate emergency organization. The Project Manager will notify the NASA PBS in the event of a fire or spill. NASA PBS may contact the appropriate local, state, and federal agencies or may request the WasteTron Project Manager to do so. NASA PBS will require NASA issued walkie-talkies for emergency contact during on-site activities. Emergency contact numbers will be posted in the clean/support zone and a copy will be given to all personnel during the daily safety meetings. Emergency contact numbers are listed below:

Contact	Organization	Telephone
Police	---	(419) 621-3222
Ambulance	---	(419) 621-3222
Fire	---	(419) 621-3222
Hospital	Perkins Medical Clinic	(419) 625-0606
Poison Control	Poison Control Center	(800) 642-3625
National Response Center	National Response Center	(800) 424-8802
Lisa Humphreys	USACE	(304) 529-5953
	(cellular phone)	(304) 617-1461
Amy Bower	NASA POC	(419) 621-3233
Bob Lallier	NASA POC	(419) 621-3234
Steve Arbogast	WasteTron	(304) 755-8448
	(cellular phone)	(304) 389-9580
Malcolm Slone	WasteTron	(304) 755-8448
	(cellular phone)	(304) 633-2373

The police, fire, and ambulance may be contacted through the above listed numbers; however the preferred method is for field personnel to contact the main gate and allow the guards to make all contacts for emergency response.

The Perkins Medical Clinic is located at 6015 Milan Road, Sandusky, Ohio. All field personnel shall become familiar with the route to the hospital. Appendix E contains a map showing the location of the hospital and evacuation routes for this area.

8.6 First Aid Response

At least two members of the field crew on-site will have valid first aid and CPR certificates. Each employee attempting to render first aid is performing the service as a Good Samaritan. To minimize contact with body fluids, personnel shall use disposal gloves when rendering first aid and use mouth guards when performing CPR.

Any person who becomes ill or injured in the work zone must be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination shall be completed and first aid administered prior to transport. Personnel shall not move an injured or seriously ill person unless it is essential to prevent further injury. Non-designated employees, except in the case of severe bleeding or cessation of breathing, shall not administer first aid. While waiting for an ambulance or paramedics, designated personnel shall administer first aid. If the situation allows, a person who has already been through the decontamination step shall render first aid.

The Project Manager shall be notified of all emergencies. Victims of medical emergencies will be transported to the hospital. Upon entering the area to set up for work, field personnel shall familiarize themselves with the route to the hospital and general evacuation routes.

8.7 Fire or Explosion

In the event of a fire or explosion, the guards at the main gate will be contacted for coordination of outside emergency contacts. The SSHO and/or Project Manager will advise the NASA PBS of the location, nature, and identification of hazardous materials on-site.

If it is safe to do so, site personnel may:

- Use fire-fighting equipment available on-site to control and/or extinguish the fire.
- Remove or isolate flammable or other hazardous materials, which may contribute to the fire.

8.8 Accident Reporting

In the event of an accident, employees are responsible for reporting all injuries or illnesses as soon as possible to the SSHO or the On-site Supervisor. The On-site Supervisor or the SSHO is responsible for investigating and reporting accident information and maintaining exposure data. The SSHO shall report his findings to management along with a plan to correct whatever

deficiency resulted in the accident. Any accident resulting in a serious injury or a fatality must be reported to OSHA within 24 hours and the accident scene shall not be disturbed until it has been released by the investigating authority, except for rescue and emergency measures. The SSHO or the On-site Supervisor will notify the POC immediately in the event of an accident or incident and they will file form ENG 3394 with the USACE within 2 working days for all reportable accidents. An ENG 3394 will be submitted any time there is an occupational illness/injury resulting in lost work days, a fatality, permanent disability, or 5 or more persons are hospitalized. Also, a copy of ENG Form 3394 will be completed for property damage of $2,000.00 or more. A copy of form ENG 3394 is located in Appendix C.

8.8.1 Investigation and Reporting

Report all accidents immediately to the USACE POC. Additionally, the contractor shall thoroughly investigate the accident and submit the findings of the investigation along with appropriate corrective actions to the USACE POC on ENG Form 3394 as soon as is possible but no later than two (2) working days following the accident. Corrective actions will be implemented as soon as is reasonably possible.

8.8.2 Supervisor's Responsibility

For job related injuries which require medical treatment, a supervisor of the injured employee shall accompany the injured employee to the medical treatment facility and explain the employee's regular duties and the availability of "Light Duty" so that the injured employee can return to work as soon as medically possible.

8.9 Emergency Equipment

Emergency equipment will be checked daily by the SSHO. The following emergency equipment shall be used on-site:

Equipment

Fire Extinguisher
16-unit first aid kit
Eye wash bottle
Cellular phone

9.0 RECORD KEEPING

Implementation of the provisions of this SSHP shall be documented. The SSHO or the Project Manager will be responsible for documenting steps taken to be in full compliance with this plan. The SSHO or the Project Manager shall keep the following records:

- Copy of this SSHP
- ENG Form 3394 (USACE Accident Investigation Report Form)

- Records of safety violations and remedial actions taken
- Records of safety meetings
- Visitor register
- PPE checklist
- Other pertinent safety and health related observations or documents

10.0 REFERENCES

The following reference materials were used in compiling the information contained in this SSHP and/or will be used in other documents associated with this project.

EM-200-1-3, "*Requirements for the Preparation of Sampling and Analysis Plans,*" U.S. Army Corps of Engineers, February 2001

EM-200-1-6, "*Chemical Quality Assurance for Hazardous, Toxic and Radioactive Waste Projects (HTRW),*" U.S. Army Corps of Engineers, October 1997

ER-1110-1-263, "*Chemical Data Quality Management for Hazardous Waste Remedial Activities,*" U.S. Army Corps of Engineers, April 1998

CELRHR 5-2-7, "*Quality Management Plan,*" U.S. Army Corps of Engineers, May, 1999

ER 385-1-92, "*Safety and Health Document Requirements,*" U.S. Army Corps of Engineers, March 1994

EM 385-1-1, "*Safety and Health Requirements Manual,*" U.S. Army Corps of Engineers, September 1996

EM 200-1-2, "*Technical Project Planning Process,*" U.S. Army Corps of Engineers, August 1998

EM 200-1-1, "*Validation of Analytical Chemistry Labs,*" U.S. Army Corps of Engineers, July 1994

ER 1165-2-132, "*HTRW Guidance for Civil Works Projects,*" U.S. Army Corps of Engineers, June 1992

EM 1110-1-4000, "*Monitoring Well Design, Installation, and Documentation at Hazardous Toxic, and Radioactive Waste Sites,*" U.S. Army Corps of Engineers, November 1998

APPENDIX A ACTIVITY HAZARD ANALYSIS

Hazard Analysis

Activity **Site Reconnaissance /Surveying** **Reviewed by/date** **RMP 10/09/02**

Principal Steps	Potential Hazards	Recommended Controls
Personnel will perform site reconnaissance and the excavation area will be surveyed.	Surfaces may be muddy or uneven creating a tripping hazard.	• Be alert and observe terrain while walking to minimize slips and falls. • Wear appropriate footwear. • When possible, personnel will avoid walking through or working in water or mud. • Personnel shall avoid climbing over site debris or equipment. • Personnel shall ensure that equipment not in use will be put in a place where it will not create a tripping hazard.
	Heat stress can occur.	• The work schedule will be adjusted, if possible, to schedule heavy work during the cooler part of the day. • The work will be paced to include adequate rest periods. Five to fifteen minute rest periods will be scheduled hourly or every 2 hours depending upon the workload, temperature, and relative humidity. • Drinking water and ice will be provided in the clean zone. Personnel will be encouraged to drink plenty of water. • The weather conditions shall be monitored and work halted if the temperature (including humidity) rises to levels that present a danger to worker safety
	Cold stress can occur.	• Extremities shall be protected from extreme cold by protective clothing. • The work area shall be shielded or employees shall be given an outer windbreak garment when the wind chill is a factor during field operations. • Outer garments must provide ventilation to prevent wetting of inner clothing by sweat. • Employees who are prone to getting their clothing wet shall be issued an outer protective garment that is water repellent. • The weather conditions shall be monitored and work halted if the temperature drops to levels that present a danger to worker safety.

Equipment to be used	Inspection Requirements	Training Requirements
Personnel shall, at a minimum wear Level D PPE during reconnaissance/surveying.	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR and First Aid

Hazard Analysis

Activity **Site Reconnaissance /Surveying** **Reviewed by/date** **RMP 10/09/02**

Principal Steps	Potential Hazards	Recommended Controls
Personnel will perform site reconnaissance and the excavation area will be surveyed.	Can become exposed to on-site chemical hazards depending on contaminant location and type.	• Minimize exposure by being properly dressed and taking basic PPE on-site walk throughs. Do not enter an area that is thought to be contaminated without the proper PPE.
	Personnel will be potentially exposed to harmful animals, insects, and poisonous plants.	• Field personnel are required on this project to wear personal protective equipment (PPE) at all times while in the work zone. • Insect repellants may be used. • A 16-unit first aid kit shall be available at the site and shall contain a variety of ointments for skin afflictions. • Water and soap shall be provided on-site for personnel to wash affected skin areas. • Personnel shall report all known allergies to plants, insects, and medication to the Project Manager and SSHO prior to work. • Personnel shall attempt to stay away from all wildlife that they encounter.

Equipment to be used	Inspection Requirements	Training Requirements
Personnel shall, at a minimum wear Level D PPE during reconnaissance/surveying.	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR and First Aid

Hazard Analysis

Activity **Sampling and Decontamination** **Reviewed by/date** **RMP 10/09/02**

Principal Steps	Potential Hazards	Recommended Controls
Personnel will perform sampling.	Personnel may come into contact with or inhale potentially high concentration of contaminants during sampling, well abandonment, and decontamination. Also personnel may come into contact with chemicals used in the field screening kits.	• Potential chemical contaminants at a site shall be reviewed prior to sampling and then personnel shall be notified of the appropriate PPE to use. • Personnel are required to wear the assigned level D PPE (refer to Section 5.1) while performing sampling and decontamination activities. • Personnel shall be careful when containerizing the decontamination waste so as not to further expose themselves.
	Heat stress can occur.	• The work schedule will be adjusted, if possible, to schedule heavy work during the cooler part of the day. • The work will be paced to include adequate rest periods. Five to fifteen minute rest periods will be scheduled hourly or every 2 hours depending upon the workload, temperature, and relative humidity. • Drinking water and ice will be provided in the clean zone. Personnel will be encouraged to drink plenty of water. • The weather conditions shall be monitored and work halted if the temperature (including humidity) rises to levels that present a danger to worker safety
	Cold stress can occur.	• Extremities shall be protected from extreme cold by protective clothing. • The work area shall be shielded or employees shall be given an outer windbreak garment when the wind chill is a factor during field operations. • Outer garments must provide ventilation to prevent wetting of inner clothing by sweat. • Employees who are prone to getting their clothing wet shall be issued an outer protective garment that is water repellent. • The weather conditions shall be monitored and work halted if the temperature drops to levels that present a danger to worker safety.
	Wet or muddy surfaces may create a tripping hazard.	• Be alert and observe terrain while walking to minimize slips and falls. Wear appropriate footwear. • When possible, personnel will avoid walking through or working in water or mud. • Personnel will avoid climbing over site debris. • Personnel shall ensure that equipment not in use will be put in a place where it will not create a tripping hazard.

Equipment to be used	Inspection Requirements	Training Requirements
Personnel shall at a minimum wear Level D PPE and have hearing protection around heavy equipment. Sampling containers, trowels, spoons, shovels, and field test kits.	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR, First Aid

Hazard Analysis

Activity **Sampling and Decontamination** **Reviewed by/date** **RMP/10-09-02**

Principal Steps	Potential Hazards	Recommended Controls
Personnel will perform sampling.	Personnel may be injured by lifting or moving heavy objects	• If a load is heavy or bulky, get help • Remember to lift with your legs and keep your back straight. • Keep the load as close to your body as you can. • Do not jerk the load. Lift slowly and carefully. • Make sure the area you will be carrying the load through is clear of obstacles. • Do not twist or turn your spine when lifting or carrying the load. • Be sure to have a good grip on your load at all times. • Be careful when lowering your load (get help, if necessary).
	Personnel will be potentially exposed to harmful animals, insects, and poisonous plants.	• Field personnel are required on this project to wear personal protective equipment (PPE) at all times while in the work zone. • Insect repellants may not be used when sampling. • A 16-unit first aid kit shall be available at the site and shall contain a variety of ointments for skin afflictions. • Water and soap shall be provided on-site for personnel to wash affected skin areas. • Personnel shall report all known allergies to plants, insects, and medication to the Project Manager and SSHO prior to work.
	Materials with sharp edges are likely to be encountered and may pose a potential cutting hazard.	• Preventative measures shall be taken to prevent cuts and scrapes. • Personnel shall wear leather gloves to protect them from potential cuts whenever possible. • A 16-unit first aid kit will be available on-site in the event personnel are cut. • Cut areas will be decontaminated and first aid rendered. • Personnel will be taken to the hospital for a tetanus shot if they are cut and have not had a recent shot.

Equipment to be used	Inspection Requirements	Training Requirements
Personnel shall at a minimum wear Level D PPE and hearing protection around heavy equipment. Sampling containers, trowels, spoons, shovels, and field test kits	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR, First Aid

Hazard Analysis

Activity **Staging /Storage/Mixing Area Construction** **Reviewed by/date** **RMP/ 10/09/02**

Principal Steps	Potential Hazards	Recommended Controls
Construction of the staging/storage/mixing area for soil prior to disposal.	Personnel may be injured by heavy equipment used in the construction of the staging/storage/ mixing area.	• Heavy machinery will be operated only by designated qualified personnel • Getting on or off of any equipment while it is in motion is prohibited • Machinery shall be operated in accordance with the manufacturer's recommendations • The use of headphones for entertainment purposes (such as radio or cassette) while operating equipment is prohibited. • All machinery shall be inspected daily (when in use) by a competent and knowledgeable person to ensure safe operating conditions • Personnel shall not operate heavy equipment in area where the utilities have not been properly marked. • All heavy equipment shall be equipped with working audible reverse signal alarms • Personnel shall wear hearing protection when working nearing operating equipment.
	Wet or muddy surfaces may create a tripping hazard.	• Be alert and observe terrain while walking to minimize slips and falls. • Wear appropriate footwear. • When possible, personnel will avoid walking through or working in water or mud. • Personnel will avoid climbing over site debris or equipment. • Personnel shall ensure that equipment not in use will be put in a place where it will not create a tripping hazard.
	Personnel will be potentially exposed to harmful animals, insects, and poisonous plants.	• Field personnel are required on this project to wear personal protective equipment (PPE) at all times while in the work zone. • Insect repellants may be used. • A 16-unit first aid kit shall be available at the site and shall contain a variety of ointments for skin afflictions. • Water and soap shall be provided on-site for personnel to wash affected skin areas. • Personnel shall report all known allergies to plants, insects, and medication to the Project Manager and SSHO prior to work.
	Personnel may be exposed to noise levels that will potentially harm their hearing.	• Personnel shall wear hearing protection when working near heavy equipment.

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE, hearing protection is need around equipment. Heavy equipment (excavator, trucks, backhoe, etc.)	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR and First Aid

Hazard Analysis

Activity **Staging/Storage/Mixing Area Construction** **Reviewed by/date** **RMP/ 10/09/02**

Principal Steps	Potential Hazards	Recommended Controls
Construction of the staging/storage/mixing area for soil prior to disposal.	Heat stress can occur.	• The work schedule will be adjusted, if possible, to schedule heavy work during the cooler part of the day. • The work will be paced to include adequate rest periods. Five to fifteen minute rest periods will be scheduled hourly or every 2 hours depending upon the workload, temperature, and relative humidity. • Drinking water and ice will be provided in the clean zone. • The weather conditions shall be monitored and work halted if the temperature (including humidity) rises to levels that present a danger to worker safety
	Cold stress can occur	• Extremities shall be protected from extreme cold by protective clothing. • The work area shall be shielded or employees shall be given an outer windbreak garment when the wind chill is a factor during field operations. • Outer garments must provide ventilation to prevent wetting of inner clothing by sweat. • Employees who are prone to getting their clothing wet shall be issued an outer protective garment that is water repellent. • The weather conditions shall be monitored and work halted if the temperature drops to levels that present a danger to worker safety.
	Personnel may be injured by lifting or moving heavy objects	• If a load is heavy or bulky, get help • Remember to lift with your legs and keep your back straight. • Keep the load as close to your body as you can. • Do not jerk the load. Lift slowly and carefully. • Make sure the area you will be carrying the load through is clear of obstacles. • Do not twist or turn your spine when lifting or carrying the load. • Be sure to have a good grip on your load at all times. • Be careful when lowering your load (get help, if necessary).
	Materials with sharp edges are likely to be encountered and may pose a potential cutting hazard.	• Preventative measures shall be taken to prevent cuts and scrapes. • Personnel shall wear leather gloves to protect them from potential cuts whenever possible. • A 16-unit first aid kit will be available on-site in the event personnel are cut. • Cut areas will be decontaminated and first aid rendered. • Personnel will be taken to the hospital for a tetanus shot if they are cut and have not had a recent shot.

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE, hearing protection is needed around loud equipment. heavy equipment (excavator, trucks, backhoe, etc.)	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR and First Aid

Hazard Analysis

Activity **Soil Stabilization Activities** **Reviewed by/date** **RMP/ 10/09/02**

Principal Steps	Potential Hazards	Recommended Controls
Personnel will be performing soil stabilization activities.	Personnel may come into contact with or inhale potentially high concentration of soil contaminants or stabilization chemicals.	• Potential chemical contaminants at a site shall be reviewed prior to sampling and then personnel shall be notified of the appropriate PPE to use. • Personnel are required to wear the assigned level of PPE while performing sampling and decontamination activities. • Personnel shall be careful when containerizing the decontamination waste so as not to further expose themselves. • Air monitoring may be performed for particulate and organic compounds if the SSHO determines that site conditions would warrant such monitoring.
	Wet or muddy surfaces may create a tripping hazard.	• Be alert and observe terrain while walking to minimize slips and falls. • Wear appropriate footwear. • When possible, personnel will avoid walking through or working in water or mud. • Personnel will avoid climbing over site debris or equipment. • Personnel shall ensure that equipment not in use will be put in a place where it will not create a tripping hazard.
	Materials with sharp edges may be encountered and may pose a potential cutting hazard.	• Preventative measures shall be taken to prevent cuts and scrapes. • Personnel shall wear leather gloves to protect them from potential cuts whenever possible. • A 16-unit first aid kit will be available on-site in the event personnel are cut. Cut areas will be decontaminated and first aid rendered. • Personnel will be taken to the hospital for a tetanus shot if they are cut.
	Personnel may be exposed to noise levels that will potentially harm their hearing.	• Personnel shall wear hearing protection when working near heavy equipment.

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE including hearing protection, heavy equipment (excavator, trucks, backhoe, etc.)	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR and First Aid

Hazard Analysis

Activity **Contaminated Soil Removal** **Reviewed by/date** **RMP/ 10/09/02**

Principal Steps	Potential Hazards	Recommended Controls
Excavation of contaminated soil	Personnel may be injured by heavy equipment used in the excavation of the contaminated soil.	• Heavy machinery will be operated only by designated qualified personnel • Getting on or off of any equipment while it is in motion is prohibited • Machinery shall be operated in accordance with the manufacturer's recommendations • The use of headphones for entertainment purposes (such as radio or cassette) while operating equipment is prohibited. • All machinery shall be inspected daily (when in use) by a competent and knowledgeable person to ensure safe operating conditions • Personnel shall not operate heavy equipment in area where the utilities have not been properly marked. • All heavy equipment shall be equipped with working audible reverse signal alarms • Personnel shall wear hearing protection when working nearing operating equipment.
	Falling into an excavation pit may injure personnel.	• Equipment shall not be parked or operated within 10 feet of any excavation. Additionally, soil or debris will not be stockpiled within 10 feet of the perimeter of the excavation area. • Personnel are not allowed to work under raised loads. • Personnel are required to stand away from the equipment being loaded or unloaded. • Personnel are not to enter any excavation that is 4 feet or more in depth. • Personnel shall not enter any excavation that is 4 feet or more in depth unless the excavation pit is equipped with a fixed means of ingress and egress. • Personnel shall not enter any excavation area that has obvious infiltration of water. Additionally, personnel shall not enter or remain within a pit during periods of rain. • Safety fencing will be erected at a minimum distance around the perimeter of the pit at a minimum of ten feet from the edge of the excavation pit. • Diversion ditches shall be constructed around the excavation area to inhibit run-off water from entering the pit. • Excavation areas shall be inspected daily while personnel are working in the area and the twice weekly until the pits are backfilled. Furthermore, the excavation areas shall be inspected after measurable amounts of rainfall.

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE including hearing protection, heavy equipment (excavator, trucks, backhoe, etc.)	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR and First Aid

Hazard Analysis

Activity **Contaminated Soil Removal** **Reviewed by/date** **RMP/ 10/09/02**

Principal Steps	Potential Hazards	Recommended Controls
Excavation of contaminated soil	Heat stress can occur.	• The work schedule will be adjusted, if possible, to schedule heavy work during the cooler part of the day. • The work will be paced to include adequate rest periods. Five to fifteen minute rest periods will be scheduled hourly or every 2 hours depending upon the workload, temperature, and relative humidity. • Drinking water and ice will be provided in the clean zone. Personnel will be encouraged to drink plenty of water. • The weather conditions shall be monitored and work halted if the temperature (including humidity) rises to levels that present a danger to worker safety
	Cold stress can occur.	• Extremities shall be protected from extreme cold by protective clothing. • The work area shall be shielded or employees shall be given an outer windbreak garment when the wind chill is a factor during field operations. • Outer garments must provide ventilation to prevent wetting of inner clothing by sweat. • Employees who are prone to getting their clothing wet shall be issued an outer protective garment that is water repellent. • The weather conditions shall be monitored and work halted if the temperature drops to levels that present a danger to worker safety.
	Personnel may be injured by lifting or moving heavy objects	• If a load is heavy or bulky, get help • Remember to lift with your legs and keep your back straight. • Keep the load as close to your body as you can. • Do not jerk the load. Lift slowly and carefully. • Make sure the area you will be carrying the load through is clear of obstacles. • Do not twist or turn your spine when lifting or carrying the load. • Be sure to have a good grip on your load at all times. • Be careful when lowering your load (get help, if necessary).
	Personnel may come into contact with or inhale potentially high concentration of contaminants during contaminated soil removal activities.	• Potential chemical contaminants at a site shall be reviewed prior to sampling and then personnel shall be notified of the appropriate PPE to use. • Personnel are required to wear the assigned level of PPE while performing sampling and decontamination activities. • Personnel shall be careful when containerizing the decontamination waste so as not to expose themselves.

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE including hearing protection, heavy equipment (excavator, trucks, backhoe, etc.)	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR and First Aid

Hazard Analysis

Activity **Contaminated Soil Removal** **Reviewed by/date** **RMP/ 10/09/02**

Principal Steps	Potential Hazards	Recommended Controls
Excavation of contaminated soil	Wet or muddy surfaces may create a tripping hazard.	• Be alert and observe terrain while walking to minimize slips and falls. • Wear appropriate footwear. • When possible, personnel will avoid walking through or working in water or mud. • Personnel will avoid climbing over site debris or equipment. • Personnel shall ensure that equipment not in use will be put in a place where it will not create a tripping hazard.
	Personnel will be potentially exposed to harmful animals, insects, and poisonous plants.	• Field personnel are required on this project to wear personal protective equipment (PPE) at all times while in the work zone. This should be helpful in limiting skin exposure to harmful plants and insects. • Insect repellants may be used. • A 16-unit first aid kit shall be available at the site and shall contain a variety of ointments for skin afflictions. • Water and soap shall be provided on-site for personnel to wash affected skin areas. • Personnel shall report all known allergies to plants, insects, and medication to the Project Manager and SSHO prior to work.
	Materials with sharp edges are likely to be encountered and may pose a potential cutting hazard.	• Preventative measures shall be taken to prevent cuts and scrapes. • Personnel shall wear leather gloves to protect them from potential cuts whenever possible. • A 16-unit first aid kit will be available on-site in the event personnel are cut. • Cut areas will be decontaminated and first aid rendered. • Personnel will be taken to the hospital for a tetanus shot if they are cut and have not had a recent shot.
	Personnel may be exposed to noise levels that will potentially harm their hearing.	• Personnel shall wear hearing protection when working near heavy equipment.

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE including hearing protection, heavy equipment (excavator, trucks, backhoe, etc.)	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR and First Aid

Hazard Analysis

Activity **Soil Stabilization Activities** **Reviewed by/date** **RMP/ 10/09/02**

Principal Steps	Potential Hazards	Recommended Controls
Personnel may be performing soil stabilization activities.	Personnel may be injured by heavy equipment (trucks and enloader used to move or stockpile soil).	• Heavy machinery will be operated only by designated qualified personnel • Getting on or off of any equipment while it is in motion is prohibited • Machinery shall be operated in accordance with the manufacturer's recommendations • The use of headphones for entertainment purposes (such as radio or cassette) while operating equipment is prohibited. • All machinery shall be inspected daily (when in use) by a competent and knowledgeable person to ensure safe operating conditions • Personnel shall not operate heavy equipment in area where the utilities have not been properly marked. • All heavy equipment shall be equipped with working audible reverse signal alarms • Personnel shall wear hearing protection when working nearing operating equipment.
	Heat stress can occur.	• The work schedule will be adjusted, if possible, to schedule heavy work during the cooler part of the day. • The work will be paced to include adequate rest periods. Five to fifteen minute rest periods will be scheduled hourly or every 2 hours depending upon the workload, temperature, and relative humidity. • Drinking water and ice will be provided in the clean zone. Personnel will be encouraged to drink plenty of water. • The weather conditions shall be monitored and work halted if the temperature (including humidity) rises to levels that present a danger to worker safety
	Cold Stress can occur.	• Extremities shall be protected from extreme cold by protective clothing. • The work area shall be shielded or employees shall be given an outer windbreak garment when the wind chill is a factor during field operations. • Outer garments must provide ventilation to prevent wetting of inner clothing by sweat. • Employees who are prone to getting their clothing wet shall be issued an outer protective garment that is water repellent. • The weather conditions shall be monitored and work halted if the temperature drops to levels that present a danger to worker safety.

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE including hearing protection, heavy equipment (excavator, trucks, backhoe, etc.)	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR and First Aid

Hazard Analysis

Activity **Soil Stabilization Activities** **Reviewed by/date** **RMP/ 10/09/02**

Principal Steps	Potential Hazards	Recommended Controls
Personnel will be performing soil stabilization activities.	Personnel will be potentially exposed to harmful animals, insects, and poisonous plants.	• Field personnel are required on this project to wear personal protective equipment (PPE) at all times while in the work zone. • Insect repellants may not be used when sampling for nitroaromatics because they can interfere and cause false hits in subsequent analysis, but it may be used at all other times. • A 16-unit first aid kit shall be available at the site and shall contain a variety of ointments for skin afflictions. • Water and soap shall be provided on-site for personnel to wash affected skin areas. • Personnel shall report all known allergies to plants, insects, and medication to the Project Manager and SSHO prior to work.

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE including hearing protection, heavy equipment (excavator, trucks, backhoe, etc.)	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR and First Aid

Hazard Analysis

Activity **Backfilling of Excavation Pit** **Reviewed by/date** **RMP/ 10/09/02**

Principal Steps	Potential Hazards	Recommended Controls
Backfill of the excavation pit	Personnel may be injured by heavy equipment used when placing clean backfill in the excavation pit.	• Heavy machinery will be operated only by designated qualified personnel • Getting on or off of any equipment while it is in motion is prohibited • Machinery shall be operated in accordance with the manufacturer's recommendations • The use of headphones for entertainment purposes (such as radio or cassette) while operating equipment is prohibited. • All machinery shall be inspected daily (when in use) by a competent and knowledgeable person to ensure safe operating conditions • Personnel shall not operate heavy equipment in area where the utilities have not been properly marked. • All heavy equipment shall be equipped with working audible reverse signal alarms • Personnel shall wear hearing protection when working nearing operating equipment.
	Falling into an excavation pit may injure personnel.	• Equipment shall not be parked or operated within 10 feet of any excavation. Additionally, soil or debris will not be stockpiled within 10 feet of the perimeter of the excavation area. • Personnel are not allowed to work under raised loads. • Personnel are required to stand away from the equipment being loaded or unloaded. • Personnel are not to enter any excavation that is 4 feet or more in depth. • Personnel shall not enter any excavation that is 4 feet or more in depth unless the excavation pit is equipped with a fixed means of ingress and egress. • Personnel shall not enter any excavation area that has obvious infiltration of water. Additionally, personnel shall not enter or remain within a pit during periods of rain. • Safety fencing will be erected at a minimum distance around the perimeter of the pit at a minimum of ten feet from the edge of the excavation pit. • Diversion ditches shall be constructed around the excavation area to inhibit run-off water from entering the pit. • Excavation areas shall be inspected daily while personnel are working in the area and the twice weekly until the pits are backfilled. Furthermore, the excavation areas shall be inspected after measurable amounts of rainfall.

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE, hearing protection around heavy equipment (excavator, trucks, backhoe, etc.)	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR and First Aid

Hazard Analysis

Activity **Backfill of Excavation Pit** **Reviewed by/date** **RMP/ 10/09/02**

Principal Steps	Potential Hazards	Recommended Controls
Backfill of the excavation pit	Heat stress can occur.	• The work schedule will be adjusted, if possible, to schedule heavy work during the cooler part of the day. • The work will be paced to include adequate rest periods. Five to fifteen minute rest periods will be scheduled hourly or every 2 hours depending upon the workload, temperature, and relative humidity. • Drinking water and ice will be provided in the clean zone. Personnel will be encouraged to drink plenty of water. • The weather conditions shall be monitored and work halted if the temperature (including humidity) rises to levels that present a danger to worker safety
	Cold stress can occur.	• Extremities shall be protected from extreme cold by protective clothing. • The work area shall be shielded or employees shall be given an outer windbreak garment when the wind chill is a factor during field operations. • Outer garments must provide ventilation to prevent wetting of inner clothing by sweat. • Employees who are prone to getting their clothing wet shall be issued an outer protective garment that is water repellent. • The weather conditions shall be monitored and work halted if the temperature drops to levels that present a danger to worker safety.
	Wet or muddy surfaces may create a tripping hazard.	• Be alert and observe terrain while walking to minimize slips and falls. • Wear appropriate footwear. • When possible, personnel will avoid walking through or working in water or mud. • Personnel will avoid climbing over site debris or equipment. • Personnel shall ensure that equipment not in use will be put in a place where it will not create a tripping hazard.

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE, hearing protection around heavy equipment (excavator, trucks, backhoe, etc.)	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR and First Aid

Hazard Analysis

Activity **Drilling Rig Activities** **Reviewed by/date** **RMP/10-09-02**

Principal Steps	Potential Hazards	Recommended Controls
A drilling rig will be used to perform abandonment of monitoring well #27.	Personnel may be injured from working around or near the drilling rig.	• A NASA digging permit will be obtained for all intrusive work (i.e. over drilling of the well). • A drilling rig inspection checklist shall be completed daily prior to use. • The area of the subsurface exploration shall be visually inspected for signs of utilities (both overhead and underground). • Overhead electric lines may require de-energizing if there exists a potential for hitting the lines. At least the minimum clearance from energized overhead electric lines as cited in Table 11-3 of the USACE Safety and Health Requirements Manual will be adhered to. • When the drilling rig equipment has been moved to the well, the rig shall be made level and the brake set. • When moving the drilling rig equipment up or down steep grades, travel directly downhill or uphill. • Avoid traveling at angles because the center of gravity of the rig or truck could shift causing an accident. • A spotter shall be used whenever overhead or lateral clearance is restricted. • The drilling rig equipment shall not be left unattended when it is running or idling. • Maintenance activities and/or refueling activities are not allowed when the equipment is running. • The hydraulic lines must be inspected periodically for signs of leaks. • Personnel shall stand clear of the rod and all other moving parts during rotation. • When performing decontamination activities, personnel shall wear appropriate PPE as required by Section 5.1 of this plan. • Personnel shall never point the wand toward their body or another person when the steam cleaner is in use. • Items shall not be hoisted overhead of personnel. • Hoist cable shall be inspected daily before use for loose connectors, frayed cable, knicks, or heavy corrosion.

Equipment to be used	Inspection Requirements	Training Requirements
Personnel shall, at a minimum wear Level D PPE, Drilling rig system	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR, First Aid

Hazard Analysis

Activity Drilling Rig Activities **Reviewed by/date** RMP/10-09-02

Principal Steps	Potential Hazards	Recommended Controls
A drilling rig will be used to perform abandonment of monitoring well #27.	Personnel may be exposed to hydrogen sulfide gas from the well when performing the well abandonment using the drilling rig.	• Personnel shall use a hydrogen sulfide meter to detect the concentration of hydrogen sulfide in the well. • Personnel shall wear the appropriate PPE has prescribed in Section 5.1 of this plan. • Personnel will attempt to minimize their contact with any contaminated materials. • Personnel will have a decontamination area set up prior to beginning work.
	Cold stress can occur.	• Extremities shall be protected from extreme cold by protective clothing. • The work area shall be shielded or employees shall be given an outer windbreak garment when the wind chill is a factor during field operations. • Outer garments must provide ventilation to prevent wetting of inner clothing by sweat. • Employees who are prone to getting their clothing wet shall be issued an outer protective garment that is water repellent. • The weather conditions shall be monitored and work halted if the temperature drops to levels that present a danger to worker safety.
	Heat stress can occur	• The work schedule will be adjusted, if possible, to schedule heavy work during the cooler part of the day. • The work will be paced to include adequate rest periods. Five to fifteen minute rest periods will be scheduled hourly or every 2 hours depending upon the workload, temperature, and relative humidity. • Drinking water and ice will be provided in the clean zone. Personnel will be encouraged to drink plenty of water. • The weather conditions shall be monitored and work halted if the temperature (including humidity) rises to levels that present a danger to worker safety
	Air monitoring will be performed for hydrogen sulfide during well abandonment activities.	• Hydrogen sulfide shall be monitored during the well abandonment activities to ensure that levels do not exceed the PEL (20 ppm) or IDLH (100 ppm) values. • As a safety precaution, WasteTron will ventilate the well using a venturi prior to beginning abandonment activities. • The venturi will be equipped with an extension so that gases will be dispersed at a height of approximately 10 to 12 feet above grade. • Also, the venturi shall be grounded since the emission of hydrogen sulfide may result in a potentially explosive atmosphere.

Equipment to be used	Inspection Requirements	Training Requirements
Personnel shall, at a minimum wear Level D PPE, Drilling rig system	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR, First Aid

Hazard Analysis

Activity: Seeding and mulching activities **Reviewed by/date** RMP/10/09/02

Principal Steps	Potential Hazards	Recommended Controls
Seeding and mulching activities in disturbed areas	Personnel can be exposed to fertilizer and lime	• Personnel shall wear PPE whenever in the work area and when working with chemicals.
	Heat stress can occur.	• The work schedule will be adjusted, if possible, to schedule heavy work during the cooler part of the day. • The work will be paced to include adequate rest periods. Five to fifteen minute rest periods will be scheduled hourly or every 2 hours depending upon the workload, temperature, and relative humidity. • Drinking water and ice will be provided in the clean zone. Personnel will be encouraged to drink plenty of water. • The weather conditions shall be monitored and work halted if the temperature (including humidity) rises to levels that present a danger to worker safety.
	Cold stress can occur.	• Extremities shall be protected from extreme cold by protective clothing. • The work area shall be shielded or employees shall be given an outer windbreak garment when the wind chill is a factor during field operations. • Outer garments must provide ventilation to prevent wetting of inner clothing by sweat. • Employees who are prone to getting their clothing wet shall be issued an outer protective garment that is water repellent. • The weather conditions shall be monitored and work halted if the temperature drops to levels that present a danger to worker safety.
	Wet or muddy surfaces may create a tripping hazard.	• Be alert and observe terrain while walking to minimize slips and falls. • When possible, personnel will avoid walking through or working in water or mud. • Personnel will avoid climbing over site debris. • Personnel shall ensure that equipment not in use will be put in a place where it will not create a tripping hazard.

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training. CPR and First Aid

Hazard Analysis

Activity: Seeding and mulching activities **Reviewed by/date** RMP/10/09/02

Principal Steps	Potential Hazards	Recommended Controls
Seeding and mulching activities in disturbed areas	Personnel may come into contact with stray animals, harmful plants (poison ivy/oak/sumac), or insects	• Field personnel are required on this project to wear personal protective equipment (PPE) at all times while in the work zone. • Insect repellants may be used. • A 16-unit first aid kit shall be available at the site and shall contain a variety of ointments for skin afflictions. • Water and soap shall be provided on-site for personnel to wash affected skin areas. • Personnel shall report all known allergies to plants, insects, and medication to the Project Manager and SSHO prior to work.
	Back strain and muscle fatigue may occur due to seeding and mulching activities.	• If a load is heavy or bulky, get help • Remember to lift with your legs and keep your back straight. • Keep the load as close to your body as you can. • Do not jerk the load. Lift slowly and carefully. • Make sure the area you will be carrying the load through is clear of obstacles. • Do not twist or turn your spine when lifting or carrying the load. • Be sure to have a good grip on your load at all times. • Be careful when lowering your load (get help, if necessary).

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training. CPR and First Aid

APPENDIX B TRAINING CERTIFICATES

THIS IS TO CERTIFY THAT

Steve Arbogast

has met the Attendance Requirements and successfully completed the
40-Hour class on Hazardous Waste Operations
and Emergency Response in accordance with OSHA 1910.120.

40 Hour Hazwoper

PRESENTED BY THE

REGULATORY
TRAINING CENTER
Dunbar, WV (304) 766-0624

Beverly A Garrett
RTC DIRECTOR

June 27, 1997
DATE

Hazwoper Training
40 Hour Certificate

Sharp Safety Services, LLC

Travis Engle

Has completed the training requirements specified in OSHA 29 CFR 1910.120

And is hereby awarded this certificate of completion. Correspondence Course

President _____ Date July 13, 2001

SHARP

Hazwoper Training
40 Hour Certificate

Sharp Safety Services, LLC

CHESTER PORTER

Has completed the training requirements specified in OSHA 29 CFR 1910.120

And is hereby awarded this certificate of completion. Correspondence Course

President

AUG 17 2001

Date

THIS IS TO CERTIFY THAT

LYNN MOLES

has met the Attendance Requirements and successfully completed the
40-Hour class on Hazardous Waste Operations and Emergency Response
In accordance with OSHA 1910.120, including Level "A" Personal Protective Equipment
and Permit-Required Confined Space Training.

40-Hour HAZWOPER

Presented By:

Regulatory Training Center
#WV-ABC-041-8
157 2nd Ave. So. Charleston, WV 25303
(304) 348-1346

RTC DIRECTOR

FEBRUARY 24, 2000
DATE

Hazwoper Training
40 Hour Certificate

Sharp Safety Services, LLC

Dwayne James

Has completed the training requirements specified in OSHA 29 CFR 1910.120

And is hereby awarded this certificate of completion: Correspondence Course

President _____ July 13, 2001 Date

Hazwoper Training
40 Hour Certificate

Sharp Safety Services, LLC

GARY HENRY

Has completed the training requirements specified in OSHA 29 CFR 1910.120

And is hereby awarded this certificate of completion. Correspondence Course

President

May 7, 2001
Date

Sharp Safety Services

Hazwoper 40 Hour Course

Gary Henry

SS# 235-04-5503

has completed the requirements for certification in OSHA 29 CFR 1910.120 on May 7, 2001

Instructor:

P.O. Box 7170 Cross Lanes WV 25356

Certificate of Achievement

Sharp Safety S...
LLC

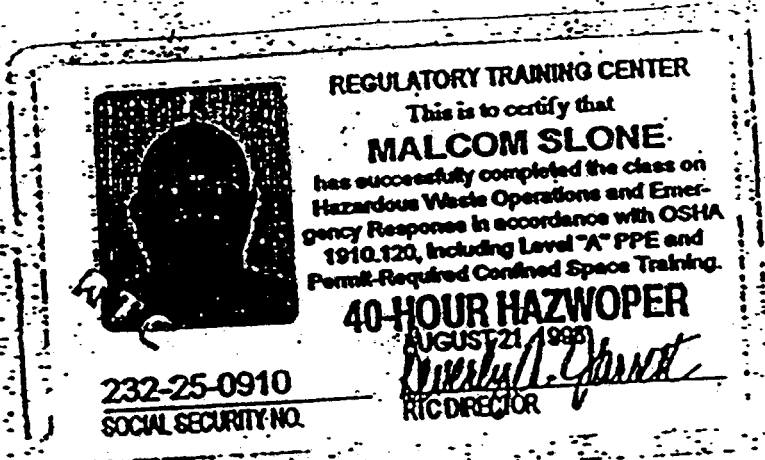
This certificate is presented to:

SENAH GUSSLER

...individual has attended and successfully passed a 40 Hour HAZWOPER ...tion Course. This course is in compliance with OSHA 29 CFR 1910.120

Signature

2-2-2001
Date



REGULATORY TRAINING CENTER

This is to certify that

MALCOM SLONE

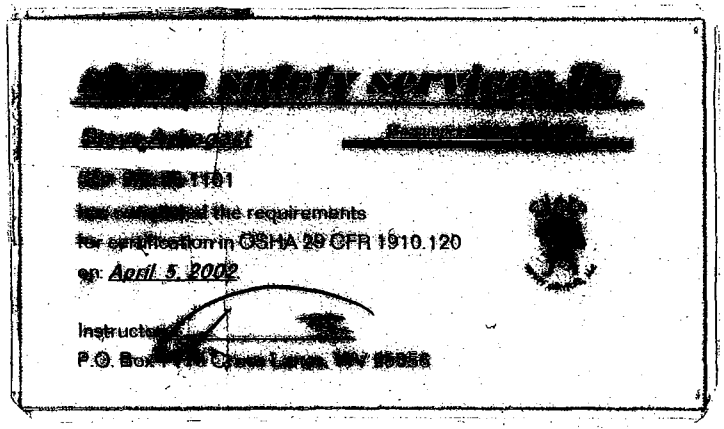
has successfully completed the class on Hazardous Waste Operations and Emergency Response in accordance with OSHA 1910.120, including Level "A" PPE and Permit-Required Confined Space Training.

40-HOUR HAZWOPER

AUGUST 21, 1998

232-25-0910
SOCIAL SECURITY NO.

RTC DIRECTOR


[redacted] has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *April 5, 2002*

8 Hour Hazwoper Refresher Course

Sharp Safety Services, LLC

MALCOM SLOAN

Has completed the training requirements specified in OSHA 29 CFR 1910.120
And is hereby awarded this certificate of completion.

President

Date

JAN 2 5 2002

8 Hour Hazwoper Refresher Course

Sharp Safety Services, LLC

CHESTER PORTER

Has completed the training requirements specified in OSHA 29 CFR 1910.120
And is hereby awarded this certificate of completion.

President

Date

JAN 2 5 2002

8 Hour Hazwoper Refresher Course

Sharp Safety Services, LLC

LYNN MOLES

Has completed the training requirements specified in OSHA 29 CFR 1910.120
And is hereby awarded this certificate of completion.

President

Date

JAN 2 5 2002

8 Hour Hazwoper Refresher Course

Sharp Safety Services, LLC

DWAYNE JAMES

Has completed the training requirements specified in OSHA 29 CFR 1910.120
And is hereby awarded this certificate of completion.

President

Date

JAN 2 5 2002

8 Hour Hazwoper Refresher Certification Course

Sharp Safety Services, LLC

GARY HENRY

Has completed the training requirements specified in OSHA 29 CFR 1910.120

And is hereby awarded this certificate of completion.

President

FEB 1 9 2002

Date

8 Hour Hazwoper Refresher Course

Sharp Safety Services, LLC

SENAH GUSSLER

Has completed the training requirements specified in OSHA 29 CFR 1910.120
And is hereby awarded this certificate of completion.

President

Date

JAN 2 5 2002

8 Hour Hazwoper Refresher Certification Course

Sharp Safety Services, LLC

TRAVIS ENGLE

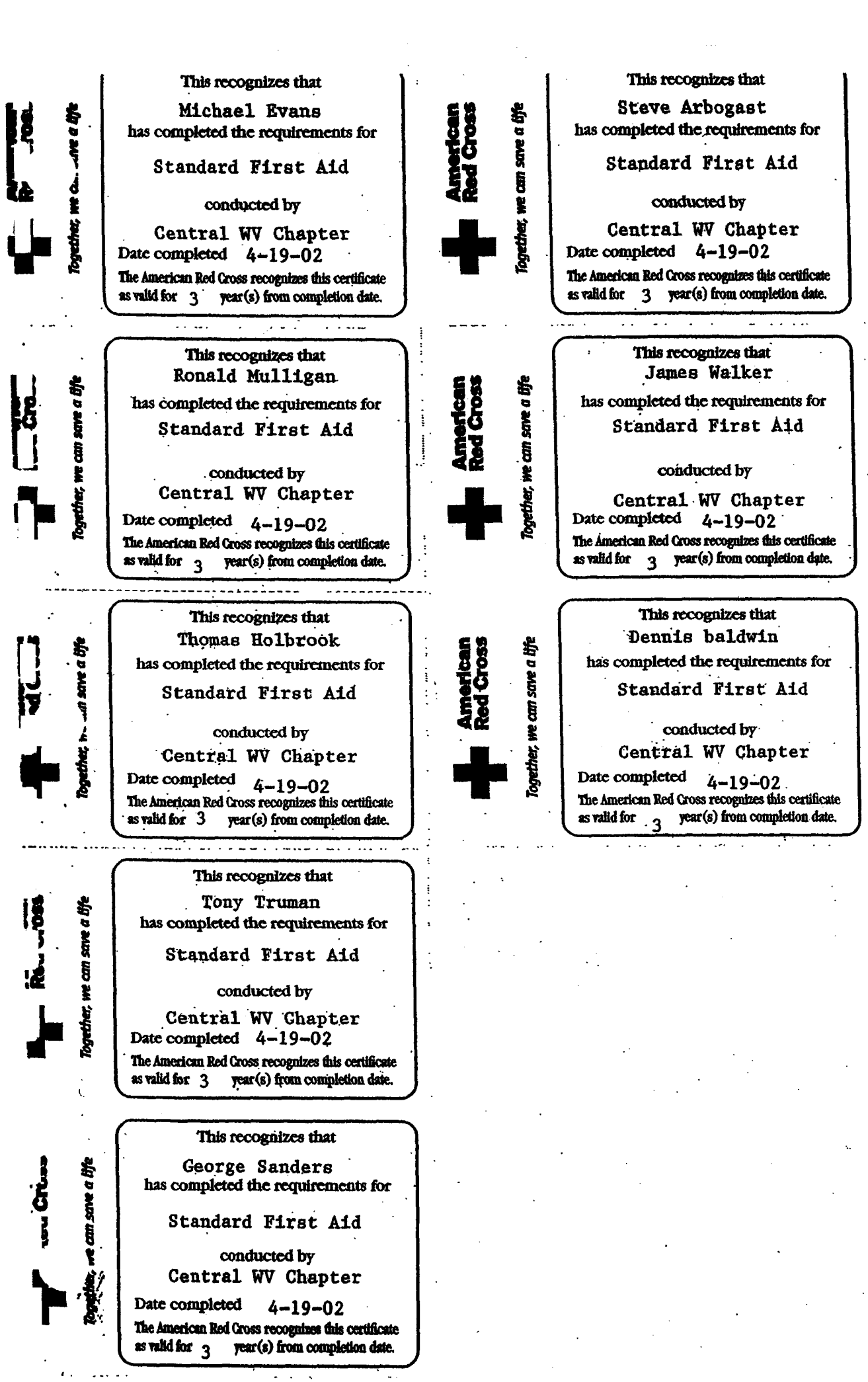
Has completed the training requirements specified in OSHA 29 CFR 1910.120

And is hereby awarded this certificate of completion.

President

FEB 1 9 2002

Date



This recognizes that
Michael Evans
has completed the requirements for
Standard First Aid
conducted by
Central WV Chapter
Date completed 4-19-02
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

This recognizes that
Steve Arbogast
has completed the requirements for
Standard First Aid
conducted by
Central WV Chapter
Date completed 4-19-02
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

This recognizes that
Ronald Mulligan
has completed the requirements for
Standard First Aid
conducted by
Central WV Chapter
Date completed 4-19-02
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

This recognizes that
James Walker
has completed the requirements for
Standard First Aid
conducted by
Central WV Chapter
Date completed 4-19-02
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

This recognizes that
Thomas Holbrook
has completed the requirements for
Standard First Aid
conducted by
Central WV Chapter
Date completed 4-19-02
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

This recognizes that
Dennis baldwin
has completed the requirements for
Standard First Aid
conducted by
Central WV Chapter
Date completed 4-19-02
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

This recognizes that
Tony Truman
has completed the requirements for
Standard First Aid
conducted by
Central WV Chapter
Date completed 4-19-02
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

This recognizes that
George Sanders
has completed the requirements for
Standard First Aid
conducted by
Central WV Chapter
Date completed 4-19-02
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

American Red Cross

Together, we can save a life

This recognizes that

Steve Arbogast

has completed the requirements for

Adult CPR

conducted by

Central WV Chapter

Date completed 4-19-02

The American Red Cross recognizes this certificate as valid for 1 year(s) from completion date.

American Red Cross

Together, we can save a life

This recognizes that

Michael Evans

has completed the requirements for

Adult CPR

conducted by

Central WV Chapter

Date completed 4-19-02

The American Red Cross recognizes this certificate as valid for 1 year(s) from completion date.

American Red Cross

Together, we can save a life

This recognizes that

James Walker

has completed the requirements for

Adult CPR

conducted by

Central WV Chapter

Date completed 4-19-02

The American Red Cross recognizes this certificate as valid for 1 year(s) from completion date.

American Red Cross

Together, we can save a life

This recognizes that

Ronald Mulligan

has completed the requirements for

Adult CPR

conducted by

Central WV Chapter

Date completed 4-19-02

The American Red Cross recognizes this certificate as valid for 1 year(s) from completion date.

American Red Cross

Together, we can save a life

This recognizes that

Dennis Baldwin

has completed the requirements for

Adult CPR

conducted by

Central WV Chapter

Date completed 4-19-02

The American Red Cross recognizes this certificate as valid for 1 year(s) from completion date.

American Red Cross

Together, we can save a life

This recognizes that

Thomas Holbrook

has completed the requirements for

Adult CPR

conducted by

Central WV Chapter

Date completed 4-19-02

The American Red Cross recognizes this certificate as valid for 1 year(s) from completion date.

American Red Cross

Together, we can save a life

This recognizes that

Tony Truman

has completed the requirements for

Adult CPR

conducted by

Central WV Chapter

Date completed 4-19-02

The American Red Cross recognizes this certificate as valid for 1 year(s) from completion date.

American Red Cross

Together, we can save a life

This recognizes that

George Sanders

has completed the requirements for

Adult CPR

conducted by

Central WV Chapter

Date completed 4-19-02

The American Red Cross recognizes this certificate as valid for 1 year(s) from completion date.

This recognizes that

Ray Lutes

has completed the requirements for

Standard First Aid

conducted by

Central WV Chapter

Date completed 2-28-02

The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

This recognizes that

Zatto Hager

has completed the requirements for

Standard First Aid

conducted by

Central WV Chapter

Date completed 2-28-02

The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

This recognizes that

Bear Slone

has completed the requirements for

Standard First Aid

conducted by

Central WV Chapter

Date completed 2-28-02

The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

This recognizes that

Brian Rakes

has completed the requirements for

Standard First Aid

conducted by

Central WV Chapter

Date completed 3-12-02

The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

This recognizes that

Eldon Haggar

has completed the requirements for

Standard First Aid

conducted by

Central WV Chapter

Date completed 3-12-02

The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

This recognizes that

Chester Porter

has completed the requirements fo

Standard First Aid

conducted by

Central WV Chapter

Date completed 2-28-02

The American Red Cross recognizes this certifi as valid for 3 year(s) from completion da

This recognizes that

Ruth Porter

has completed the requirements fo

Standard First Aid

conducted by

Central WV Chapter

Date completed 2-28-02

The American Red Cross recognizes this certific as valid for 3 year(s) from completion dat

This recognizes that

Keith Meeks

has completed the requirements for

Standard First Aid

conducted by

Central WV Chapter

Date completed 2-28-02

The American Red Cross recognizes this certific as valid for 3 year(s) from completion date

This recognizes that

Dwayne James

has completed the requirements for

Standard First Aid

conducted by

Central WV Chapter

Date completed 2-28-02

The American Red Cross recognizes this certifica as valid for 3 year(s) from completion date

This recognizes that

Gary Henery

has completed the requirements for

Standard First Aid

conducted by

Central WV Chapter

Date completed 2-28-02

The American Red Cross recognizes this certifica as valid for 3 year(s) from completion date.

American Red Cross
We'll be there.

This recognizes that

Rick Boggs

has completed the requirements for

Standard First Aid

conducted by

Central WV Chapter

Date completed 2-28-02

The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

American Red Cross
We'll be there.

This recognizes that

Noah Bills

has completed the requirements for

Standard First Aid

conducted by

Central WV Chapter

Date completed 2-28-02

The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

American Red Cross
We'll be there.

This recognizes that
David Adkins
has completed the requirements for
Adult CPR
conducted by
Central WV Chapter
Date completed 3-1-02
The American Red Cross recognizes this certificate as valid for 1 year(s) from completion date.

American Red Cross
We'll be there.

This recognizes that
Chester Porter
has completed the requirements for
Adult CPR
conducted by
Central WV Chapter
Date completed 2-28-02
The American Red Cross recognizes this certific as valid for 1 year(s) from completion dat

American Red Cross
We'll be there.

This recognizes that
Gary Cooper
has completed the requirements for
Adult CPR
conducted by
Central WV Chapter
Date completed 3-1-02
The American Red Cross recognizes this certificate as valid for 1 year(s) from completion date.

American Red Cross
We'll be there.

This recognizes that
Ruth Porter
has completed the requirements for
Adult CPR
conducted by
Central WV Chapter
Date completed 2-28-02
The American Red Cross recognizes this certific as valid for 1 year(s) from completion dat

American Red Cross
We'll be there.

This recognizes that
Lynn Moles
has completed the requirements for
Adult CPR
conducted by
Central WV Chapter
Date completed 3-1-02
The American Red Cross recognizes this certificate as valid for 1 year(s) from completion date.

American Red Cross
We'll be there.

This recognizes that
Keith Meeks
has completed the requirements for
Adult CPR
conducted by
Central WV Chapter
Date completed 2-28-02
The American Red Cross recognizes this certific as valid for 1 year(s) from completion date

American Red Cross
We'll be there.

This recognizes that
Rick Boggs
has completed the requirements for
Adult CPR
conducted by
Central WV Chapter
Date completed 2-28-02
The American Red Cross recognizes this certificate as valid for 1 year(s) from completion date.

American Red Cross
We'll be there.

This recognizes that
Dwayne James
has completed the requirements for
Adult CPR
conducted by
Central WV Chapter
Date completed 2-28-02
The American Red Cross recognizes this certific as valid for 1 year(s) from completion date

American Red Cross
We'll be there.

This recognizes that
Noah Bills
has completed the requirements for
Adult CPR
conducted by
Central WV Chapter
Date completed 2-28-02
The American Red Cross recognizes this certificate as valid for 1 year(s) from completion date.

American Red Cross
We'll be there.

This recognizes that
Gary Henery
has completed the requirements for
Adult CPR
conducted by
Central WV Chapter
Date completed 2-28-02
The American Red Cross recognizes this certifica as valid for 1 year(s) from completion date.

This recognizes that
RUTH PORTER
has completed the requirements for
STANDARD FIRST AID
conducted by
PUTNAM
Date completed 2-25-2000
The American Red Cross recognizes this certificate as valid for 3 years from completion date.

This recognizes that
DAVID WALKER
has completed the requirements for
STANDARD FIRST AID
conducted by
PUTNAM
Date completed 2-25-2000
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

American Red Cross
We'll be there.

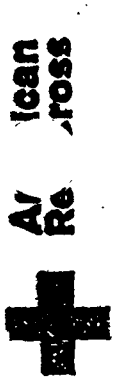
This recognizes that
RODNEY ROBERTS
has completed the requirements for
STANDARD FIRST AID
conducted by
PUTNAM
Date completed 2-25-2000
The American Red Cross recognizes this certificate as valid for 3 years from completion date.

This recognizes that
GENE WHEELER
has completed the requirements for
Community First Aid
conducted by
Putnam Co. CHAPTER
Date completed 03-02-01
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

This recognizes that
PAUL SALUJA
has completed the requirements for
Community First Aid
conducted by
Putnam Co. CHAPTER
Date completed 03-02-01
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

This recognizes that
Joe Wheeler
has completed the requirements for
First Aid Basics
conducted by
Putnam County Chapter
Date completed 3-27-01
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

This recognizes that
C. DAVID STROH
has completed the requirements for
STANDARD FIRST AID
conducted by
PUTNAM
Date completed 2-25-2000
The American Red Cross recognizes this certificate as valid for 3 years from completion date.



This recognizes that
LOUNDELL FINLEY
has completed the requirements for
STANDARD FIRST AID
conducted by
PUTNAM
Date completed 2-25-2000
The American Red Cross recognizes this certificate as valid for 3 years from completion date.

This recognizes that
GEORGE LIGVILLE
has completed the requirements for
COMMUNITY FIRST AID
conducted by
Putnam Co. CHAPTER
Date completed 03-02-01
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

This recognizes that
JULIE GLOCKNER
has completed the requirements for
STANDARD FIRST AID
conducted by
PUTNAM
Date completed 2-25-2000
The American Red Cross recognizes this certificate as valid for 3 years from completion date.

This recognizes that
MARK MEADOWS
has completed the requirements for
STANDARD FIRST AID
conducted by
PUTNAM
Date completed 2-25-2000
The American Red Cross recognizes this certificate as valid for 3 years from completion date.

This recognizes that
SENAH GUSSLER
has completed the requirements for
COMMUNITY FUST AID
conducted by
Putnam Co. CHAPTER
Date completed 03-02-01
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

This recognizes that
LYNN MOLES
has completed the requirements for
STANDARD FIRST AID
conducted by
PUTNAM
Date completed 2-25-2000
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

This recognizes that
GREG HAGER
has completed the requirements for
COMMUNITY FUST AID
conducted by
PUTNAM Co. CHAPTER
Date completed 03-02-01
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

This recognizes that
JAMES NOSCHINO
has completed the requirements for
COMMUNITY FUST AID
conducted by
PUTNAM Co. CHAPTER
Date completed 03-02-01
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

This recognizes that
D. HEATH ADKINS
has completed the requirements for
STANDARD FIRST AID
conducted by
PUTNAM
Date completed 2-25-2000
The American Red Cross recognizes this certificate as valid for 3 years from completion date.

American Red Cross
We'll be there.

This recognizes that
JAMES COOPER
has completed the requirements for
STANDARD FIRST AID
conducted by
PUTNAM
Date completed 2-25-2000
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

American Red Cross
We'll be there.

This recognizes that
STEVE ARBOGAST
has completed the requirements for
STANDARD FIRST AID
conducted by
PUTNAM
Date completed 2-25-2000
The American Red Cross recognizes this certificate as valid for 3 years from completion date.

American Red Cross
We'll be there.

This recognizes that
Jeff Cooper
has completed the requirements for
Community Fust Aid
conducted by
Putnam Co. Chapter
Date completed 03-02-01
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

American Red Cross
We'll be there.

This recognizes that
DAVID BEAM
has completed the requirements for
Community Fust Aid
conducted by
PUTNAM CO. CHAPTER
Date completed 03-02-01
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

American Red Cross
We'll be there.

This recognizes that
MICHAEL EVANS
has completed the requirements for
STANDARD FIRST AID
conducted by
PUTNAM
Date completed 2-25-2000
The American Red Cross recognizes this certificate as valid for 3 years from completion date.

American Red Cross
We'll be there.

This recognizes that
GARY COOPER
has completed the requirements for
Community Fust Aid
conducted by
Putnam Co. Chapter
Date completed 03-02-01
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

American Red Cross
We'll be there.

This recognizes that
CHRIS FRITZ
has completed the requirements for
Community First Aid
conducted by
PUTNAM CO. CHAPTER
Date completed 03-02-01
The American Red Cross recognizes this certificate as valid for 3 year(s) from completion date.

SUBCONTRACTOR'S TRAINING CERTIFICATES

EMILCOTT/DGA

HEALTH, SAFETY AND ENVIRONMENTAL TRAINING PROGRAM

THIS CERTIFIES THAT

Shane Congrove

HAS SUCCESSFULLY COMPLETED

40 Hour Health and Safety for Hazardous Waste Operations CFR 1910.120

DATE January 18, 2001 LOCATION Westerville, OH

Dianne Grote Adams

Dianne Grote Adams, CIH, CSP Course Director

EMILCOTT/DGA

HEALTH, SAFETY AND ENVIRONMENTAL TRAINING PROGRAM

THIS CERTIFIES THAT

Shane Congrove

HAS SUCCESSFULLY COMPLETED

8-Hour Refresher Training Course for Hazardous Waste Operations CFR 1910.120

April 26, 2002 — DATE

Emilcott/DGA Training Center — LOCATION

Dianne Grote Adams

Dianne Grote Adams, CIH, CSP — Course Director

EMILCOTT/DGA

HEALTH, SAFETY AND ENVIRONMENTAL TRAINING PROGRAM

THIS CERTIFIES THAT

Kevin M. Little

HAS SUCCESSFULLY COMPLETED

8-Hour Refresher Training Course for Hazardous Waste Operations CFR 1910.120

April 26, 2002 — DATE

Emilcott/DGA Training Center — LOCATION

Dianne Grote Adams

Dianne Grote Adams, CIH, CSP — *Course Director*

ENVIRONMENTAL, SAFETY & INDUSTRIAL HYGIENE

Envirocon-Alpha Corp.

HEALTH, SAFETY AND ENVIRONMENTAL TRAINING PROGRAM

This Certifies That

Kevin M. Little

Has Successfully Completed

40-Hour Health and Safety Training Course for Hazardous Waste Operations

Date September 30, 1999 Location Westerville, Ohio

Dianne Grote Adams

Dianne Grote Adams, CIH, CSP *Course Director*

West Virginia University
Safety and Health Extension

GEORGE MEANY CENTER FOR LABOR STUDIES

cpwr
The Center to Protect Workers' Rights

National Resource Center for OSHA Training

This is to certify that on February 28, 2002

Andrea R. Thomas

Has diligently and with merit completed training in
Trainer Course in Occupational Safety & Health Standards
for the General Industry
(OSHA 501)

2.5 CEU's

Andrea R. Tillett
Director of Training

OSHA

U.S. Department of Labor
Occupational Safety and Health Administration

ANDREA THOMAS

has successfully completed a 30-hour Occupational Safety and Health Training Course in

General Industry Safety & Health

Larry E. Brown 12/19/01
(Trainer) (Date)

OSHA

U.S. Department of Labor
Occupational Safety & Health Administration Training Institute
THE NATIONAL RESOURCE CENTER

This acknowledges that

ANDREA R. THOMAS

is an OSHA General Industry Outreach Trainer

Trainers are authorized to conduct 10- and 30- hour General Industry outreach training in accordance with guidelines provided by the OSHA Training Institute.

Director: [signature] Expires 2/23/06

ANDREA R. THOMAS
DIRECTOR OF OPERATIONS

- **PROFESSIONAL SUMMARY**

Ms. Thomas has over nine years experience in the environmental, safety, and health fields. As the acting Director of Operations for the Hurricane, WV office of Pinnacle Environmental Consultants, Inc., Ms. Thomas is responsible for the coordination, scheduling, and training of personnel and projects, supervision of field operations, performance of Industrial Hygiene related duties, and much more. Ms. Thomas brings with her the extensive knowledge of federal, state, and local regulations, along with a diverse range of work experience as summarized below:

- **SELECTED PROJECT EXPERIENCE**

  - DOW Chemical (formerly Union Carbide Corp.), South Charleston and surrounding areas in WV. Contracted as an Industrial Hygienist for the South Charleston, Technical Center, and North Charleston operations. Also acted as an emergency response team member for these locations.

  - General Services Administration, Charleston, WV. Responsible for project management duties of a large scale asbestos removal and renovation project.

  - Dupont Plant, Parkersburg, WV. Performed air sampling and analysis of airborne asbestos. Also performed air monitoring for lead, arsenic and other contaminants.

  - Marshal University, Huntington, WV. Performed numerous asbestos inspections of a large hospital and home structures that were to be demolished for a future project.

  - Bank One Center, Charleston, WV. Performing Project Management and asbestos air monitoring and analysis for large-scale abatement / renovation project.

  - US Army Corp. of Engineers, Robert C. Byrd Lock and Dam, Apple Grove, WV. Performed Project Management and Industrial Hygiene duties (i.e. lead air monitoring, ventilation surveys, etc.).

- **EDUCATION**

WV State College
Major: Occupational Safety & Health
1998-Current

- **LICENSES & CERTIFICATES**
  - Clearance Air Monitoring License
  - Asbestos Inspector License
  - NIOSH 582 Method-sampling an evaluating airborne asbestos dust, (National Institute for Occupational Safety and Health)
  - Regulatory Training Center-Safety Orientation
  - OSHA approved 30 and 10 hour General Industry Trainer
  - CPR and First Aid

- **FIELDS OF EXPERTISE**

Airborne contaminate sampling utilizing approved testing methods. Project management of large-scale asbestos and lead abatement / demolition projects. Established Industrial Hygiene Workplace Characterizations for large industrial facilities. Perform indoor air quality investigations including but not limited to, noise, bacteria, fungi, and pesticide testing. Conduct safety and health related safety training. Perform job hazard analysis for customers.

APPENDIX C PPE CHECKLIST, MISC. FORMS

PPE CHECKLIST

All personnel shall perform an inspection of their PPE prior to performing activities on-site. The following items shall be checked.

____ Determine that the clothing material is that which has been designated for this project.

____ Visually inspect clothing for: imperfect seams, non-uniform coatings, tears, malfunctioning closures

____ Hold up to light and check for pinholes

____ Flex product and make observations for cracks or other signs of shelf deterioration

____ If the product has been used before, inspect inside and out for signs of chemical attack, discoloration, swelling, or stiffness.

____ Visually inspect gloves for imperfect seams, tears, and non-uniform coating

____ Pressurize gloves with air; listen for pinhole leaks

____ Check hardhat for cracks or other signs of stress

____ Check the suspension of your hardhat. Look for loose or torn cradle straps, loose rivets, broken sewing lines or other defects.

____ If using earmuffs, check the muffs for cracks, cuts or missing gaskets.

____ If using earplugs, check the plugs for cracks and or cuts.

____ Check safety glasses for scratches

____ If using a respirator, check for holes in filters

____ If using a respirator, check for cracks or scratches on the facepiece

____ If using a respirator, check for loss of elasticity or tears in straps

____ If using a respirator, check for general cleanliness

____ If using an air purifying respirator, check for proper fit by performing the positive-pressure and negative pressure tests

SAFETY EQUIPMENT CHECKLIST

_____ Fire Extinguisher (in office trailer)

_____Fire Extinguisher (on heavy equipment)

_____16-unit first aid kit

_____Eye wash bottle

_____Cellular phone

VISITOR LOG

Everyone entering the exclusion zone and the contamination reduction zone shall meet the training and medical requirements of 29 CFR 1910.120. Visitors not meeting these requirements are only allowed in the support/clean zone. All visitors to the project site are required to adhere to the Site Specific Health and Safety Plan.

Compliance Agreement

I have read and understand this Site Specific Health and Safety Plan. I will comply with the provisions contained herein.

Project Site: _____

Name (Printed)	Signature	Date

Daily Safety Meeting

Project: _____ Date: _____

Discussion of work conditions and task expected to be completed today:

Topics to be discussed: (list below) **Task related to Safety Topic:** (list below)

Comments from Project Manager or SSHO concerning the meeting:

Notes concerning any safety related incidents that occurred:

Safety Meeting attendance:

I have attended the daily safety meeting. I have been briefed on today's job tasks and fully understand the safety issues associated with each task.

Name (printed)	**Signature**	**Date**
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Site-Specific Safety and Health Plan
Field Certification Form

Stabilization, Excavation and Disposal of Contaminated Soil
Plum Brook Ordnance Works
Sandusky, Ohio

Contract No. DACW69-00-D-0021
Work Order No. 020

This document is provided to certify that field personnel have reviewed the Site-Specific Safety and Health Plan and will comply with its contents.

Print Name	Signature	Date

CONTRACTOR'S QUALITY CONTROL REPORT (QCR) (ER 1180-1-6)	DATE:	REPORT NO.

CONTRACT NUMBER AND NAME OF CONTRACTOR	DESCRIPTION AND LOCATION OF THE WORK:
WasteTron ***Poca, WV***	Tracts: ***SEE BOTTOM OF PAGE***

WEATHER CLASSIFICATION:	CLASSIFICATION:
CLASS A No interruptions of any kind from weather conditions occurring on this or previous shifts.	CLASS _____
CLASS B Weather occurred during this shift that caused a complete stoppage of all work.	TEMPERATURE:
CLASS C Weather occurred during this shift that caused a partial stoppage of work.	MAX ___ MIN ___
CLASS D Weather overhead excellent or suitable during shift. Work completely stopped due to results of previous adverse weather.	PRECIPITATION:
CLASS E Weather overhead excellent or suitable during shift but work partially stopped due to previous adverse manner.	INCHES _____
OTHER Explain.	

CONTRACTOR/SUBCONTRACTORS AND AREA OF RESPONSIBILITY FOR WORK PERFORMED TODAY: *(Attach list of items of equipment either idle or working as appropriate.)*

a. ***Pickup truck, trailer, riding lawn mower, weed eater, tractor with brush hog***
b. _____
c. _____
d. _____
e. _____
f. _____
g. _____

1. WORK PERFORMED TODAY: *(Indicate location and description of work performed. Refer to work performed by prime and /or subcontractors by letter in Table above.)*

Performed general lawn mowing

2. TYPE AND RESULTS OF INSPECTION: *(Indicate whether: P-Preparatory, I-Initial, or F-Follow-up and include satisfactory work completed or deficiencies with action to be taken.)*

N/A

3. TESTS REQUIRED BY PLANS AND/OR SPECIFICATIONS PERFORMED AND RESULTS OF TESTS:

N/A

4. VERBAL INSTRUCTIONS RECEIVED: *(List any instructions given by Government personnel on construction deficiencies, retesting required, etc., with action to be taken.)*

NONE

5. REMARKS: *(Cover any conflicts in plans, specifications or instructions: acceptability of incoming materials; offsite surveillance activities; progress of work, delays, causes and extent thereof; days of no work with reasons for same.)*

N/A

6. SAFETY: *(Include any infractions of approved safety plan, safety manual or instructions from Government personnel. Specify corrective actions taken.)*

ALL SAFETY EQUIPMENT WORN

INSPECTOR

CONTRACTOR'S CERTIFICATION: I certify that the above report is complete and correct and that all material and equipment used, work performed and tests conducted during this reporting period were in strict compliance with the contract plans and specifications except as noted above.

CONTRACTOR'S APPROVED AUTHORIZED REPRESENTATIVE

fety aff only)	REPORT NO.	EROC CODE	**UNITED STATES ARMY CORPS OF ENGINEERS ACCIDENT INVESTIGATION REPORT** *(For Use of this Form See Help Menu and USACE Suppl to AR 385-40)*	REQUIREMENT CONTROL SYMBOL: CEEC-S-8(R2)

1. ACCIDENT CLASSIFICATION

PERSONNEL CLASSIFICATION	INJURY/ILLNESS/FATAL	PROPERTY DAMAGE	MOTOR VEHICLE INVOLVED	DIVING
MENT LIAN ☐ MILITARY	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ CONTRACTOR	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ PUBLIC ☐ FATAL ☐ OTHER			☐	

2. PERSONAL DATA

Name *(Last, First, MI)*	b. AGE	c. SEX ☐ MALE ☐ FEMALE	d. SOCIAL SECURITY NUMBER	e. GRADE

f. JOB SERIES/TITLE	g. DUTY STATUS AT TIME OF ACCIDENT	h. EMPLOYMENT STATUS AT TIME OF ACCIDENT
	☐ ON DUTY ☐ TDY ☐ OFF DUTY	☐ ARMY ACTIVE ☐ ARMY RESERVE ☐ VOLUNTEER ☐ PERMANENT ☐ FOREIGN NATIONAL ☐ SEASONAL ☐ TEMPORARY ☐ STUDENT ☐ OTHER (Specify)

GENERAL INFORMATION

a. DATE OF ACCIDENT *(month/day/year)*	b. TIME OF ACCIDENT *(Military time)* hrs	c. EXACT LOCATION OF ACCIDENT	d. CONTRACTOR'S NAME (1) PRIME: (2) SUBCONTRACTOR:

e. CONTRACT NUMBER	f. TYPE OF CONTRACT	g. HAZARDOUS/TOXIC WASTE ACTIVITY
☐ CIVIL WORKS ☐ MILITARY ☐ OTHER *(Specify)*	☐ CONSTRUCTION ☐ SERVICE ☐ A/E ☐ DREDGE ☐ OTHER *(Specify)*	☐ SUPERFUND ☐ DERP ☐ IRP ☐ OTHER *(Specify)*

CONSTRUCTION ACTIVITIES ONLY *(Fill in line and corresponding code number in box from list - see help menu)*

CONSTRUCTION ACTIVITY	(CODE) #	b. TYPE OF CONSTRUCTION EQUIPMENT	(CODE) #

INJURY/ILLNESS INFORMATION *(Include name on line and corresponding code number in box for items e, f & g - see help menu)*

ITY OF ILLNESS/INJURY	(CODE) #	B. ESTIMATED DAYS LOST	C. ESTIMATED DAYS HOSPITALIZED	D. ESTIMATED DAYS RESTRICTED DUTY

. BODY PART AFFECTED		g. TYPE AND SOURCE OF INJURY/ILLNESS	
PRIMARY	(CODE) #	TYPE	(CODE) #
SECONDARY	(CODE) #	SOURCE	(CODE) #
.. NATURE OF ILLNESS / INJURY	(CODE) #		

PUBLIC FATALITY *(Fill in line and correspondence code number in box - see help menu)*

. ACTIVITY AT TIME OF ACCIDENT	(CODE) #	b. PERSONAL FLOATATION DEVICE USED?
		☐ YES ☐ NO ☐ N/A

7. MOTOR VEHICLE ACCIDENT

i. TYPE OF VEHICLE	b. TYPE OF COLLISION	c. SEAT BELTS	USED	NOT USED	NOT AVAILABLE
☐☐ PICKUP/VAN ☐☐ AUTOMOBILE ☐☐ TRUCK ☐☐ OTHER *(Specify)*	☐ SIDE SWIPE ☐ HEAD ON ☐ REAR END ☐ BROADSIDE ☐ ROLL OVER ☐ BACKING ☐ OTHER *(Specify)*	(1) FRONT SEAT			
		(2) REAR SEAT			

3. PROPERTY/MATERIAL INVOLVED

a. NAME OF ITEM	B. OWNERSHIP	C. $ AMOUNT OF DAMAGE
(1)		
(2)		
(3)		

9. VESSEL/FLOATING PLANT ACCIDENT *(Fill in line and correspondence code number in box from list - see help menu)*

a. TYPE OF VESSEL/FLOATING PLANT	(CODE) #	b. TYPE OF COLLISION/MISHAP	(CODE) #

ACCIDENT DESCRIPTION *(Use additional paper, if necessary)*

See attached page.

11. CAUSAL FACTOR(S) *(Read Instruction Before Completing)*

a. (Explain YES answers in item 13)	YES	NO
DESIGN: Was design of facility, workplace or equipment a factor?	☐	☐
:CTION/MAINTENANCE: Were inspection & maintenance procedures a factor?	☐	☐
PERSON'S PHYSICAL CONDITION: In your opinion, was the physical condition of the person a factor?	☐	☐
OPERATING PROCEDURES: Were operating procedures a factor?	☐	☐
JOB PRACTICES: Were any job safety/health practices not followed when the accident occurred?	☐	☐
HUMAN FACTORS: Did any human factors such as, size or strength of person, etc., contribute to accident?	☐	☐
ENVIRONMENTAL FACTORS: Did heat, cold, dust, sun, glare, etc., contribute to the accident?	☐	☐

a. *(CONTINUED)*	YES	NO
CHEMICAL AND PHYSICAL AGENT FACTORS: Did exposure to chemical agents, such as dust, fumes, mists, vapors or physical agents, such as, noise, radiation, etc., contribute to accident?	☐	☐
OFFICE FACTORS: Did office setting such as, lifting office furniture, carrying, stooping, etc., contribute to the accident?	☐	☐
SUPPORT FACTORS: Were inappropriate tools/resources provided to properly perform the activity/task?	☐	☐
PERSONAL PROTECTIVE EQUIPMENT: Did the improper selection, use or maintenance of personal protective equipment contribute to the accident?	☐	☐
DRUGS/ALCOHOL: In your opinion, was drugs or alcohol a factor to the accident	☐	☐

b. WAS A WRITTEN JOB/ACTIVITY HAZARD ANALYSIS COMPLETED FOR TASK BEING PERFORMED AT TIME OF ACCIDENT?

☐ YES *(If yes, attach a copy.)* ☐ NO

12. TRAINING

a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK?	b. TYPE OF TRAINING.	c. DATE OF MOST RECENT FORMAL TRAINING.
☐ YES ☐ NO	☐ CLASSROOM ☐ ON JOB	(Month) (Day) (Year)

13. FULLY EXPLAIN WHAT ALLOWED OR CAUSED THE ACCIDENT; INCLUDE DIRECT AND INDIRECT CAUSES *(See instruction for definition of direct and indirect causes.) (Use additional paper, if necessary)*

a. DIRECT CAUSE

See attached page.

b. INDIRECT CAUSE(S)

See attached page.

14. ACTION(S) TAKEN, ANTICIPATED OR RECOMMENDED TO ELIMINATE CAUSE(S).

DESCRIBE FULLY:

See attached page.

DATES FOR ACTIONS IDENTIFIED IN BLOCK 14.

a. BEGINNING (Month/Day/Year)	b. ANTICIPATED COMPLETION (Month/Day/Year)		
c. SIGNATURE AND TITLE OF SUPERVISOR COMPLETING REPORT CORPS _____ CONTRACTOR _____	d. DATE *(Mo/Da/Yr)*	e. ORGANIZATION IDENTIFIER *(Div, Br, Sect)*	f. OFFICE SYMBOL

16. MANAGEMENT REVIEW *(1st)*

a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS

SIGNATURE	TITLE	DATE

17. MANAGEMENT REVIEW *(2nd - Chief Operations, Construction, Engineering, etc.)*

a. ☐ CONCUR b. ☐ NON CONCUR c. COMMENTS

SIGNATURE	TITLE	DATE

18. SAFETY AND OCCUPATIONAL HEALTH OFFICE REVIEW

a. ☐ CONCUR b. ☐ NON CONCUR c. ADDITIONAL ACTIONS/COMMENTS

SIGNATURE	TITLE	DATE

19. COMMAND APPROVAL

'ENTS

COMMANDER SIGNATURE	DATE

*U.S. GOVERNMENT PRINTING OFFICE: 1993-0-791-757

10. ACCIDENT DESCRIPTION *(Continuation)*

DIRECT CAUSE *(Continuation)*

13b.	INDIRECT CAUSES *(Continuation)*

14.	ACTION(S) TAKEN, ANTICIPATED, OR RECOMMENDED TO ELIMINATE CAUSE(S) *(Continuation)*

CHAIN OF CUSTODY RECORD NO. 625

REI Consultants, Inc.
225 Industrial Park Rd.
P.O. Box 286, Beaver, WV 25813
Phone: 304-255-2500 or 800-999-0105
FAX: 304-255-2572

CLIENT: _____ CONTACT PERSON: _____

ADDRESS: _____ TELEPHONE/FAX: _____

CITY/STATE/ZIP: _____ SITE ID & STATE: _____

BILL TO: _____ PROJECT ID: _____

CITY/STATE/ZIP: _____ SAMPLER: _____

SAMPLE LOG AND ANALYSIS REQUEST

TURNAROUND TIME REQUIREMENTS
REGULAR: ___
*RUSH: ___ 5-Day
___ 3-Day
___ 2-Day
___ 1-Day
*Rush work needs prior Laboratory approval and will include surcharges

PRESERVATIVES
0 No Preservative
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide
6 Zinc Acetate
7 EDTA

PRESERVATIVE CODES

NOTE PRESERVATIVES →

SAMPLE ID	NO. & TYPE OF CONTAINERS	SAMPLING DATE / TIME	MATRIX	SAMPLE COMP / GRAB	ANALYSIS REQUESTED & METHOD	COMMENTS

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

Special Requests: Sample Condition: Good? Y N Temperature Upon Arrival °C

Shipment: Hand-Del: Courier: UPS: FedEx: Shipment Date: FAX Results: Y N

APPENDIX D **MEDICAL DATA SHEET**

MEDICAL DATA SHEET

This medical data sheet is to be completed by all on-site personnel and will be kept on-site during field operations. This data sheet shall accompany any personnel who need medical assistance.

Project: _____

Name: _____ Home Phone: _____

Address: _____

Name and telephone number of Person to notify in case of an Emergency:

_____

Drug or other Allergies: _____

_____

Do you wear contact lenses: _____ Are you wearing contacts on this job?(if so, notify SSHO) _____

What medications are you presently taking?

_____

_____

Name, Address, and Phone Number of your Personal Physician:

_____

_____

Summary of the
Medical Monitoring Program
For WasteTron

WasteTron Inc. requires employees to submit to routine medical examinations prior to job assignment, annually thereafter, and upon reassignment or termination of employment. WasteTron will provide information to the examining physician concerning the employee's job duties and anticipated exposures. The contents of the routine medical examination include the following:

Medical and work history

Pulmonary function test

Chest X-ray

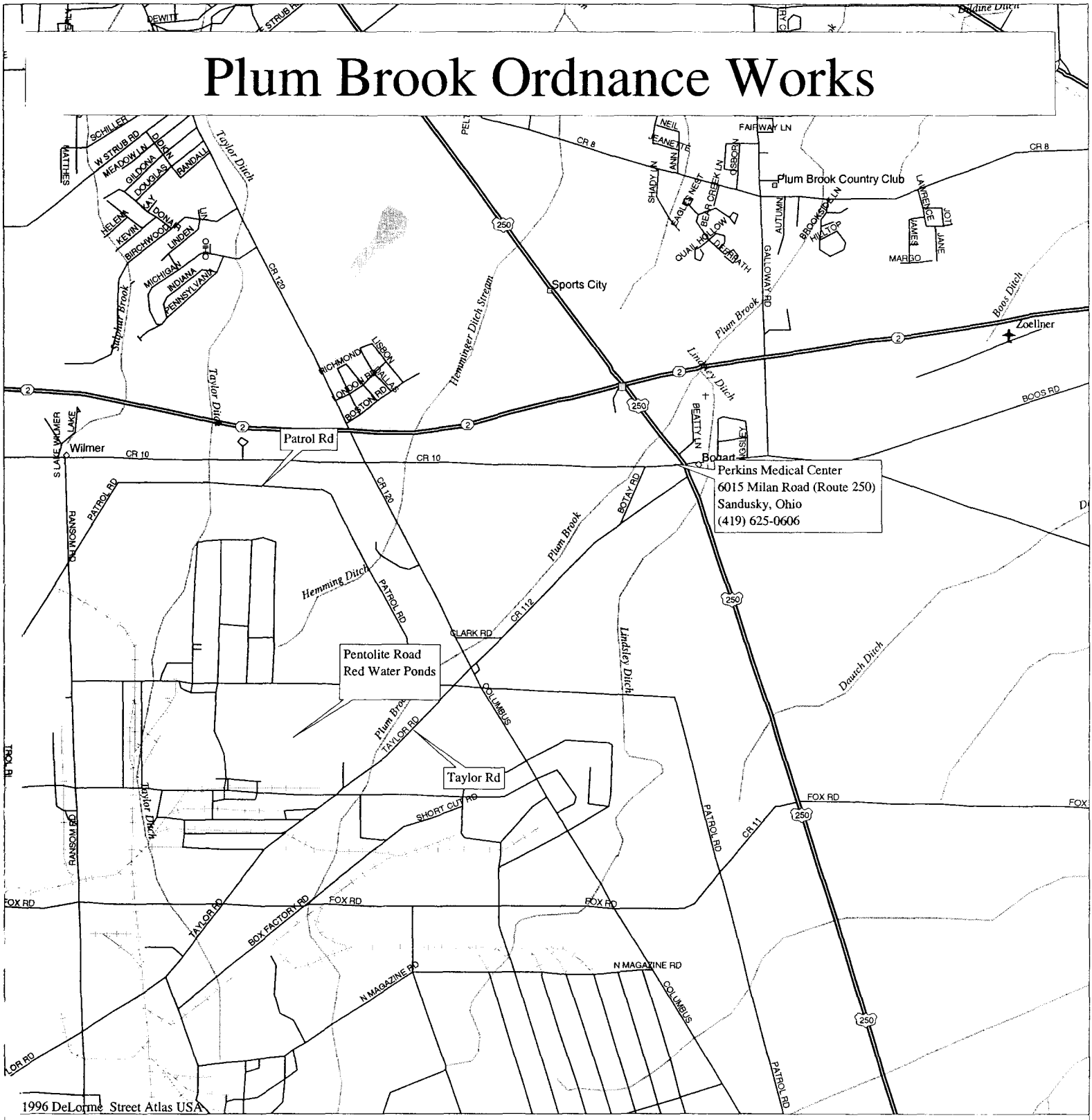
Drug screen and breath alcohol

Stress test for all personnel over thirty (30) years of age is mandatory; it is optional for others.

A physician will examine personnel exposed to hazardous substances above the permissible exposure limits as soon, as is possible. The examining physician will determine what actions are necessary, including follow-up examinations or consultations.

APPENDIX E MAP

Plum Brook Ordnance Works



Mag 14.00
Mon Oct 28 16:32 2002
Scale 1:31,250 (at center)
2000 Feet
1000 Meters

- Secondary SR/Road/Hwy Ramp
- Interstate/Limited Access
- US Highway
- Railroad
- Point of Interest
- Airfield
- Park/Reservation
- Locale
- Private Airport
- Exit
- Cemetery
- Population Center
- Water
- River/Canal
- Intermittent River

APPENDIX F **WasteTron General Safety Policy**

WasteTron Inc.
GENERAL SAFETY POLICY

Reviewed: 1/5/02

Table Of Contents

I. APPLICATION

Applies to all WasteTron Inc. personnel and subcontractors.

II. OVERVIEW

The purpose of this program is to ensure understanding of all WasteTron Inc. safety policies. This includes, but is not limited to, OSHA regulations. WasteTron Inc. is committed to ensuring the safety of **WasteTron Inc.** employees, contractors, and visitors.

III. COMPANY BELIEFS

A. All occupational injuries and illnesses can be prevented.

B. All exposures to hazardous materials and hazardous work situations can be controlled.

C. Prevention of injuries and illnesses is equal in importance to production, quality, cost, and morale.

D. Management and clients are responsible for providing safe working environments for employees.

IV. ENFORCEMENT POLICY

All WasteTron Inc. safety policies will be strictly enforced. Failure to comply can and will be grounds for disciplinary action.

V. GENERAL SAFETY POLICY REQUIREMENTS

A. Provide employees with safety training orientation that covers general safety and housekeeping rules, emergency procedures, process hazards, toxicity data, policies, and standards.

B. Training and orientation shall be documented.

C. Provide employees with all safety equipment and personal protective equipment (PPE) required to perform services for their clients.

VI. EMPLOYEE ORIENTATION

A. New employees shall be given safety instructions before performing any work.

1. There are general safety rules that apply to all employees, regardless of the assignment. Discussing these safety rules at the beginning will serve to impress new employees with importance of safety and our interest in their safety.

2. Specific safety precautions that apply exclusively to their particular job must be explained along with instructions on how to perform the job. When new employees are taught how to do their job, they should, at the same time, be taught how to do it safely.

B. When teaching new employees about safety, do not leave the details of safety instructions to chance. Never assume new employees know the details. Ensure they know exactly what you expect. Communicate your standards and audit for results.

1. The following essential safety points will be reviewed with each new employee.

   a. Injury/illness reporting.
   b. First aid.
   c. Personal safety responsibilities.
   d. Emergency procedures.
   e. Personal protective equipment rules and use.
   f. General safety rules.
   h. Hazard reporting.
   h. Safety rule violations.
   i. Health hazards.
   j. How to report unsafe conditions and practices.

VII. GENERAL SAFETY RULES

A. Housekeeping rules are as follows.

1. Do not litter.
2. Pick up trash and deposit in containers.
3. Place recyclable items in proper containers.
4. Maintain a neat and orderly workplace. No clutter or junk on desktops or tables.
5. Immediately wipe up spills from the floors. Barricade if quantities are large.

B. Each client location should have established safety rules and procedures to cover complex tasks and usual working conditions. It is the responsibility of each employee to know and follow these rules and procedures.

Typical site specific rules cover the following:

1. Required personal protective equipment (PPE).
2. Work and special use permits.
3. Use of ladders, scaffolds, and fall protection PPE.
4. Excavations.
5. Equipment lockout.
6. Operation of valves and electric switches.
7. Chemical use approvals.
8. Electrical hot work.
9. Emergency/disaster procedures.
10. Confined space entry permits.

Take the time to read site-specific rules and develop an understanding of how they impact your job responsibilities.

VIII. SUBSTANCE ABUSE

A. Purpose

1. This policy establishes guidelines for company action in the event of substance abuse, which negatively impacts an employee's professional performance, jeopardizes the safety of other employees, or otherwise adversely affects the company.

2. It also provides guidelines pertaining to pre-employment physical testing of employment applicants and current employees for the presence of controlled substances.

3. This practice and procedure applies to all WasteTron Inc. employees and contract personnel.

B. Beliefs

1. Substance abuse, both alcohol and chemical abuse, is a growing problem in our society that can impact our workplace.

2. Substance dependence is an illness that can be treated and completely controlled through continued abstinence.

3. Safety, health, and environmental quality are of primary importance to the company.

C. Definitions

Alcohol - Alcoholic beverages (e.g., beer, wine, liquor).

Legal Drugs to Excess - Prescription medication taken to excess.

Substance Abuse - The possession, use, distribution, or sale of illegal or controlled substances; or use of legal drugs or alcohol to excess.

D. Condition to Employment

1. Use, possession, sale, or distribution of drugs or other controlled substances for nonmedical reasons is prohibited.

2. Individuals may be subject to substance abuse testing upon the request of management.

3. Individuals may be subject to inspection of their person, vehicle, or personal effects while on the company property.

4. Violation of any of these conditions will result in discipline up to and including discharge.

E. Responsibilities

1. Management

a. Assures compliance with and enforcement of this practice and procedure.

b. Coordinates all physical testing of applicants and employees and conducting ongoing Substance Abuse Awareness training for WasteTron Inc. employees.

c. Observes the appearance and conduct of employees.

d. Maintains records of unusual observations.

e. Provide evidence/witness to substantiate allegations.

2. All Employees

a. Observes the appearance and conduct of fellow employees.

b. Notifies your supervisor of any unusual behavior or unauthorized/unlawful activity.

F. Requirements

1. All candidates for hire are required to submit to the chemical screening process as a condition of employment.

2. Failure to submit to or a positive confirmed drug test is grounds for denying employment or continued employment.

3. For employees suspended without pay, proof of participation and documented progress in a medically supervised treatment program is required before reinstatement will be considered.

IX. WORKSITE SAFETY MANAGEMENT

A. General Requirements

1. An OSHA 200 Log will be maintained and updated to meet OSHA requirements. A copy will be made available to the client.

2. It is the responsibility of all WasteTron Inc. personnel, and subcontractors to report unsafe conditions. Personnel will report unsafe conditions to Client Management. Documentation will be sent to WasteTron Inc. Project Management.

3. Employee involvement and intervention is mandatory. WasteTron Inc. personnel are encouraged to participate in client safety programs. Project Managers shall inspect worksites for unsafe conditions, practices, and rule violations at least on a monthly basis.

B. Unsafe Conditions

1. Definition

A set of conditions with respect to the workplace and equipment that exists through someone's oversight or carelessness. These conditions may cause occupational injuries or illnesses.

2. Reporting and Handling

a. When an employee observes a hazard or an unsafe condition, he/she should correct the condition or take appropriate action to eliminate the hazard or unsafe condition.

b. All reported hazards and unsafe conditions are to be corrected as soon as practical.

c. All hazards and unsafe conditions with serious potential should be reported immediately.

d. All employees should accept the responsibility for advising Management of any outstanding hazards reported, hazards of an unusual nature, and hazards that might exist in another part of the workplace.

C. Unsafe Practices

1. Definition

Unsafe practices are failures on the part of individuals to follow specific safety rules and accepted safety practices of the job.

2. Handling

When an unsafe practice is observed, the necessary action to prevent an injury must be taken immediately.

3. General

a. It will be the responsibility of each area to establish definite times and frequencies to make specific audits for unsafe practices. Job Safety Analysis Audits will be performed at regular intervals and the dates recorded.

b. All unsafe practices with serious potential for injury should be reported.

D. SPI - Serious Potential Incident

1. An occurrence which could have resulted in an "Other" Recordable injury/illness or greater.

2. An occurrence which could have resulted in significant equipment or property damage.

E. Unusual Incident

If it is determined that the incident does not meet the criteria of a SPI, but something can be learned and there is application elsewhere, then this incident should be called an Unusual Incident and sent to the specific area(s) where the lesson applies or to site distribution.

F. Communication/Publicity

1. Each employee will be questioned and informed of details of the injury or incident as soon as possible.

2. WasteTron Inc. Management will circulate the final write-up to all employees and other locations as necessary.

G. Allegations to Adverse Reactions

1. Scope

This procedure applies to all WasteTron Inc. employees who allege adverse reactions to chemicals, products, and/or process.

2. Overview

Certain allegations of adverse reactions to chemicals, products, and/or processes must be recorded and records maintained for possible submittal to EPA. The allegations may be made by employees, contractors, neighbors, processors, or consumers of a client's products.

Significant adverse reactions are defined in the regulation as reactions "that may indicate a substantial impairment of normal activities, or long-lasting or irreversible damage to health or the environment." An allegation is

defined as a statement, made without formal proof or regard for evidence, that a chemical substance or mixture has caused an adverse reaction.

A record will be kept of all such allegations of adverse reactions, in preparation for possible submittal to the Environmental Protection Agency.

3. The procedure for handling allegations of adverse reactions is as follows:

   a. A form will be used to record each allegation.

   b. Allegation by WasteTron Inc. employee: Employee's supervisor should discuss the allegation with the employee and complete the form. It may be appropriate to involve client safety and health resources.

   c. Allegations by others should be referred to the client (ER manager or Environmental, Safety and Health Manager).

   d. Completed allegation reports will be forwarded to the Client ER Manager for action. A copy will be retained by WasteTron Inc.

X. FIRE EXTINGUISHER TRAINING

A. INTRODUCTION

WasteTron Inc. recognizes that fire is one of the leading causes of accidental death. The intent of this program is to inform employees of what to do in case there is a fire.

B. HOW FIRES START

1. A fire needs four elements to occur:

   Fuel
   Oxygen
   Heat/Chemical Reaction

2. A fuel can be any combustible material; solid, liquid, or gas.

3. The air we breathe contains more than enough oxygen to keep a fire going.

4. Heat/Chemical reaction is the energy source necessary to start a fire.

5. If you take any of these elements away, a fire cannot occur, or if it is already burning it will go out.

C. HOW FIRES ARE CLASSIFIED

There are four classifications of fires; Class A, B, C, and D.

1. **Class A** fires are combustibles or fibrous material such as wood, paper, cloth, rubber, and some plastics.

2. **Class B** fires are flammable or combustible liquids such as gasoline, kerosene, paint, and propane.

3. **Class C** fire deals with energized electrical equipment such as switches, panel boxes, and power tools.

4. **Class D** fires are certain combustible metals such as magnesium, titanium, potassium and sodium. These metals burn at high temperatures and may react violently with water or other chemicals, and must be handled with care.

D. HOW TO EXTINGUISH A FIRE

It is important to know how to extinguish each class of fire.

1. Extinguish a Class A fire by cooling the material below its ignition temperature by using pressurized water, foam or multi-purpose dry chemical extinguishers. DO NOT USE carbon dioxide or ordinary dry chemical extinguishers on Class A fires.

2. Extinguish Class B fires by removing oxygen from the flammable liquids. Foam, carbon dioxide, multi purpose dry chemical and halon extinguishers may be used to fight Class B fires.

3. Extinguish electrical equipment fires by using carbon dioxide, multi-purpose dry chemical and halon fire extinguishers. DO NOT USE water extinguishers on Class C fires.

4. Use Class D extinguishers to put out combustible metals such as magnesium, potassium, and sodium. Class D extinguishers are dry powder extinguishing agents designated for the material involved.

5. Each fire extinguisher will have a rating on the faceplate. Some

extinguishers are marked with multiple ratings such as AB, BC, and ABC. These extinguishers are capable of putting out more than one class of fire. Take the time to become familiar with the locations and the type of extinguishers in your area. If you see a fire extinguisher that has a missing pin or has not been inspected contact your supervisor.

WasteTron Inc. has multi-purpose (class A, B, or C) type fire extinguishers located in the lab and in the mobile units. The location of each fire extinguisher is clearly marked. All personnel should make it a point to familiarize themselves with the location of each fire extinguisher.

E. HOW TO USE A PORTABLE FIRE EXTINGUISHER

1. If you decide to use a fire extinguisher remember the word **PASS.**

   P - Pull the Pin
   A - Aim the nozzle at the base of the flame.
   S - Squeeze the trigger while holding the extinguisher upright.
   S - Sweep the extinguisher from side to side, covering the area of the fire with the extinguishing agent.

2. TAKE FIRE EXTINGUISHERS THAT HAVE BEEN DISCHARGED

OR DAMAGED OUT OF SERVICE.
   Contact your WasteTron Inc. Management for a replacement.

3. Your personal safety is a top priority in a fire. You should leave the area immediately if:

   - your path of escape is threatened
   - the extinguisher runs out of agent
   - the extinguisher is not effective
   - or you no longer can fight the fire safely

4. If you should ever discover a large fire call 911.

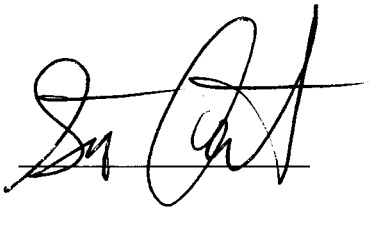
APPENDIX G **QC Documentation**

Quality Assurance Certification
Site-Specific Safety and Health Plan

Stabilization, Excavation and Disposal of Contaminated Soil
Plum Brook Ordnance Works
Sandusky, Ohio

Contract No. DACW69-00-D-0021
Work Order No. 020

This document is provided to certify that the independent Internal Quality Control Team (IQCT) have reviewed the Site-Specific Safety and Health Plan in accordance with the Quality Control Plan. All comments resulting from the various reviews have been resolved and/or incorporated.

Assignment	Name	Signature	Date
Senior Review	David Beam	_____	_____
Peer Review	Joseph Wheeler	_____	_____
Project Manager Review	Steve Arbogast		10-28-02

Quality Assurance Certification
Site-Specific Safety and Health Plan

Stabilization, Excavation and Disposal of Contaminated Soil
Plum Brook Ordnance Works
Sandusky, Ohio

Contract No. DACW69-00-D-0021
Work Order No. 020

This document is provided to certify that the independent Internal Quality Control Team (IQCT) have reviewed the Site-Specific Safety and Health Plan in accordance with the Quality Control Plan. All comments resulting from the various reviews have been resolved and/or incorporated.

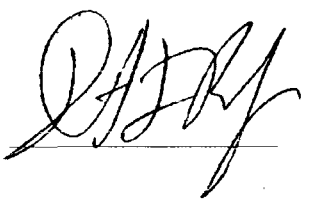
Assignment	Name	Signature	Date
Senior Review	David Beam	_____	_____
Peer Review	Joseph Wheeler		10-22-02
Project Manager Review	Steve Arbogast	_____	_____

Quality Assurance Certification
Site-Specific Safety and Health Plan

Stabilization, Excavation and Disposal of Contaminated Soil
Plum Brook Ordnance Works
Sandusky, Ohio

Contract No. DACW69-00-D-0021
Work Order No. 020

This document is provided to certify that the independent Internal Quality Control Team (IQCT) have reviewed the Site-Specific Safety and Health Plan in accordance with the Quality Control Plan. All comments resulting from the various reviews have been resolved and/or incorporated.

Assignment	Name	Signature	Date
Senior Review	David Beam		10-22-02
Peer Review	Joseph Wheeler	_____	_____
Project Manager Review	Steve Arbogast	_____	_____

QUALITY CONTROL REVIEW CHECKLIST
Site-Specific Safety and Health Plan

Stabilization, Excavation and Disposal of Contaminated Soil
Plum Brook Ordnance Works
Sandusky, Ohio

Contract No. DACW69-00-D-0021
Work Order No. 020

The following checklist is provided for QC review of the SSHP for this project.

1.	Introduction	_____
2.	Project Description	_____
3.	Hazard/Risk Analysis	_____
4.	Contractor Project Organization and Training	_____
5.	Safety Procedures/PPE Program	_____
6.	Site Control Measures	_____
7.	Decontamination Plan	_____
8.	Emergency Response and Contingency Plan	_____
9.	Record Keeping	_____
10.	References	_____
	APPENDIX A	_____
	APPENDIX B	_____
	APPENDIX C	_____
	APPENDIX D	_____
	APPENDIX E	_____
	APPENDIX F	_____
	APPENDIX G	_____

Comments on Draft Site Specific Safety and Health Plan

Stabilization, Excavation and Disposal of Contaminated Soil
Plum Brook Ordnance Works
Sandusky, Ohio

Contract No. DACW69-00-D-0021
Work Order No. 020

The following comments were provided by the WasteTron Independent Quality Control Team (IQCT). All comments resulting from this review has been resolved and/or incorporated.

1. Section 3.2.14, 4 bulleted item, change "or" to "of"

Response: Concur, change made

2. Page 4, top of page, please note that 2 total samples shall be collected of the processed soil. Also, if the soil found to be hazardous, then additional sampling will be required after stabilization.

Response: Concur, the wording has been changed to indicate that 3 samples (2 filed and 1 QC samples) will be required. Also, sampling was adding as a requirement if further stabilization was necessary.

3. page 38, insert as a bullet "The derrick shall be lowered and secured before the drilling rig is moved"

Response: Concur, this information was added as a bullet

4. Page 43- add APR between half-face respirator

Response: Concur, this information was added

Comments on Draft Site Specific Safety and Health Plan

Stabilization, Excavation and Disposal of Contaminated Soil
Plum Brook Ordnance Works
Sandusky, Ohio

Contract No. DACW69-00-D-0021
Work Order No. 020

The following comments were provided by the Huntington District of the USACE.. All comments resulting from this review has been resolved and/or incorporated.

The subject plan was reviewed by this office and is recommended for acceptance with the following modifications:

a. Page 37, Paragraph 3.3.8, first bullet. Does this imply that personnel will be in the backhoe bucket? EM 385-1-1, Section 16.A.24 states that "Personnel shall not...ride in buckets...."

Response: Concur, that the bulleted item shall be changed

b. Page 38, Table 3. The final two clearances in this table should read 10.5 m and 13.5 m. This is actually a typographical error in EM 385-1-1.

c. Page 43, Level C PPE, third bullet. Since respirable dust may be encountered, filters for respirators should be included in this bullet.

d. Page 43, Level C PPE, sixth bullet. A face shield is only secondary eye protection; safety glasses with side shields must be worn under a face shield.

e. Appendix A, Hazard Analyses. Wherever the potential hazards possible contaminants, no mention was made in the recommended controls about possible air monitoring.

f. Appendix A, Seeding and Mulching, Page 2. The recommended controls for back strain and muscle fatigue are not related to the hazards.