FINAL
Site-Specific Safety and Health Plan Addendum

TNT Area B and Pentolite Road Redwater Pond Area
Bioremediation of Contaminated Soil
Plum Brook Ordnance Works
Sandusky, Ohio

Contract No. DACW69-03-D-0007
Work Order No. 0004

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Date: 11/21/03 Checked By: Lisa A. Humphreys
Approval subject to provisions of the contract.
DEPARTMENT OF THE ARMY
HUNTINGTON DISTRICT CORPS OF ENGINEERS
CONSTRUCTION BRANCH

Prepared by:

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

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Ruth Fortner 10/6/03
SSHP Developer **Date**

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Definitions and Acronyms

CFR	Code of Federal Regulations
CPR	Cardiopulmonary Resuscitation
DNT	Dinitrotoluene
EPA	Environmental Protection Agency
HAZWOPER	Hazardous Waste Operations and Emergency Response
HDPE	High Density Polyethylene
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 Aeronautical and Space Administration
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety & Health Administration
PBS	Plum Brook Station
PBOW	Plum Brook Ordnance Works
PEL	Permissible Exposure Limit
POC	Point of Contact – technical point of contact for the U.S. Army Corps of Engineers
PPE	Personal Protective Equipment
QC	Quality Control
QCP	Quality Control Plan

REIC	Research Environmental and Industrial Consultants
SOW	Scope of Work
SSHO	Site-specific 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
WVOW	West Virginia Ordnance Works

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1.0 INTRODUCTION

1.1 Purpose

Pursuant to Contract DACW69-03-D-007, Work Order 0004, WTI shall prepare addendums to the previously submitted and approved plans for the Plum Brook Ordnance Works (PBOW) site that were issued under Contract No. DACW69-00-D-0021, Work Order No. 020. The purpose of the Site Specific Safety and Health Plan (SSHP) Addendum is to address safety issues relating to bioremediation of contaminated soil at the site through ex-situ windrow composting. This addendum does not replace the Final SSHP (WTI, September 2002) but serves as a supplement to that plan. Copies of both plans shall be available on-site.

During development of the Final SSHP (WTI, September 2002) and this addendum, 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 Safety Policy Enforcement

Field personnel are required to familiarize themselves with this addendum and the Final Site Specific Safety and Health Plan (WTI, September 2002) so that they may adhere to its safety provisions. The provisions of the Final SSHP (WTI, September 2002) and this addendum 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.

2.0 PROJECT DESCRIPTION

2.1 Introduction

In Spring 2003, stockpiles from 2,4,6-trinitrotoluene (TNT) B pits 463 and 452 were sampled for waste characterization purposes for subsequent disposal. Analytical results revealed that both stockpiles were hazardous. Stockpile 463 had elevated levels of 2,4-dinitrotoluene (DNT) above the regulatory value of 0.13 mg/l for the toxicity characteristic leaching procedure (TCLP)

analysis. Stockpile 452 had elevated levels for both 2,4-DNT and lead (regulatory value is 5.0 mg/l). Additionally, the concentrations of the contaminants not only made the material characteristically hazardous but the concentrations also exceeded the land disposal restrictions; therefore, preventing land filling of this material without prior treatment. Currently there are approximately 750 tons of soil in each stockpile, combined for a total of 1,500 tons of soil from pits 452 and 463. Additionally there is approximately 225 tons of nitroaromatic-contaminated soil at the Pentolite Redwater Pond Area that requires treatment. A total of approximately 1725 tons of nitroaromatic-contaminated soil requires treatment prior to disposal.

In accordance with the previous contract (DACW69-00-D-0021, Work Order No. 020), stockpile 452 was treated with MAECTITE® to chemically fixate the lead. The soil was treated on August 6th, 2003 and six samples were collected of the treated soil on August 7, 2003 to confirm the effectiveness of the treatment. Analytical results from the six composite soil samples were all "not detected" for TCLP lead. Therefore, the two stockpiles now only require treatment to lower the concentration of 2,4-DNT.

The pit excavations (452 and 463) are currently open and filled with water. The accumulated water in the pits has been analyzed and found to be non-hazardous; therefore, Ohio Environmental Protection Agency (EPA) and National Aeronautic Space Administration (NASA) have given permission for the water to be disposed of in the West Area Redwater Ponds. The water will be discharged at a rate that will not disturb or erode existing sediment or vegetation. The excavation pits require backfill with either clean borrow material or treated soil. The use of treated soil will be dependent upon meeting the current site remedial goals or alternative remedial goals approved by Ohio EPA.

2.2 Objectives

United States Army Corps of Engineers (USACE) has received approval from Ohio EPA to perform ex situ treatment in the form of bioremediation for the stockpiled soil currently located at the site (total volume is approximately 1,725 tons). The bioremediation will be accomplished through windrow composting. Pursuant to the Scope of Work (SOW), addendums will be prepared to the final plans submitted and approved under the previous Contract No. DACW69-00-D-0021, Work Order No. 020. The addendums will address all new work activities. Pursuant to the SOW issued under Contract DACW69-03-D-007, Work Order 0004, the tasks shown in the previous contract shall be revised as shown in Sections 2.2.1 through 2.2.4.14. Refer to Plan of Operations Addendum for detailed information concerning each of these tasks. A summary of the tasks is provided in the following sections.

2.2.1 Preparation and Submission of an Addendum to the Plan of Operations (Task 3)

Pursuant to the SOW, an addendum to the Plan of Operations will be prepared to describe composting related activities and disposal options for the treated soil.

2.2.2 Field Activities and Utilities (Task 4)

WTI shall coordinate with the Plum Brook Station (PBS) personnel in a timely manner for all utility clearance prior (digging permit) to performing site intrusive activities (i.e., constructing the sump for water collection and so forth). WTI has been instructed by NASA to relocate approximately 40 tanks from the treatment pad area to the warehouse area once plans are approved.

2.2.3 Excavation of Contaminated Material (Task 6)

Due to the expense of the ex situ treatment and associated disposal/use for the existing stockpiled soils from pits 452 and 463, no further excavation shall be conduct at this time.

2.2.4 Stabilization and Ex Situ Treatment (Task 7)

The stockpiled soil (approximately 750 tons) from pit 452 was treated with MAECTITE® to chemically fixate the lead in the soil. Six samples of the treated soil were collected and analyzed for toxicity characteristic leaching procedure (TCLP) lead analysis. Analytical data revealed that the lead had been chemically fixated. All sample results were non-detect for TCLP lead.

Currently there are two stockpiles at the TNT B site, each containing approximately 750 tons and a 225-ton stockpile at the Pentolite Redwater Pond Area; therefore, a total of 1,725 tons of nitroaromatic contaminated soil requires treatment. Ex situ treatment of the nitroaromatic contaminated soil will be achieved through windrow composting.

2.2.4.1 Amendment Test Plan (Task 7A)

In order to expedite the project, amendment testing was not performed. Amendment types and ratios of amendments used were based upon previous amendment testing and bench scale data from the West Virginia Ordnance Works (WVOW) project currently being performed in Point Pleasant, West Virginia under Contract No. DACW69-02-D-0004, Work Order 0006.

2.2.4.2 Bench Scale Test Plan (Task 7B)

Refer to the Bench Scale Test Plan for a description of the bench scale testing to be performed. The Bench Scale Test Plan addresses, but is not limited to, the following:

- Location of the testing facility
- Amendment selection rationale
- The source of each amendment
- Test parameters and number of samples
- Sampling locations that will be used to determine the source of soil
- The proposed portions of amendments and soil in each recipe
- Types of containers that will be used
- Frequency of mixing

- Testing and monitoring parameters
- Number of samples
- Monitoring frequency
- Length of monitoring period
- Laboratory turn-around time

2.2.4.3 Treatment of Contaminated Stockpile Soil (Task 7C)

Treatment shall be performed using ex situ composting in order to reduce nitroaromatic levels in all soil to non-hazardous levels that would allow disposal to a non-hazardous landfill. WTI shall be responsible for the design of the bioremediation system and shall submit this information in the composting process section of the Plan of Operations Addendum.

2.2.4.4 Transportation (Task 7D)

WTI shall arrange for transportation of the stockpiled material to the designated treatment area along the Pentolite Road (west of the Reactor Facility). All contaminated material shall be transported in such a manner has to prevent spilling of soil and/or water. If necessary, sealed roll off boxes will be utilized to transport soils that contain water in sufficient quantities that it would leak from a bed of a dump truck.

2.2.4.5 Screening (Task 7E)

All stockpiled material shall be screened to remove materials larger than 1.5 inches in diameter, prior to placement in the treatment area. Pursuant to the SOW, WTI shall attempt to reduce the size of any degradable materials larger than 1.5 inches in diameter prior to including them with the soil to be treated.

2.2.4.6 Clearing and Grubbing (Task 7F)

The treatment area is an asphalt pad that is approximately 180 feet wide and 270 feet long. WTI will need to clear and grub the north, west, and eastern portions surrounding the treatment pad for drainage purposes.

2.2.4.7 Construction of the Treatment Pad (Task 7G)

NASA has granted the USACE permission to use the asphalt pad located west of the Reactor Facility along Pentolite Road. Currently there are tank trucks (approximately 40) located on this pad; however, they are not in use and are empty. WTI has been instructed by NASA to relocate these tanks to the warehouse area once plans are approved. The size of the treatment pad shall be maximized to fit within the existing asphalt pad (approximately 180' x 270'). WTI shall place and compact a minimum of eight inches of clay material on the asphalt pad. The treatment pad will be sloped to allow drainage to one end where a sump will be located. Berms will be constructed around three sides of the treatment pad to prevent run-off or run-on of water.

2.2.4.8 Air Monitoring (Task 7H)

Air monitoring shall be performed to ensure the safety of personnel and/or determine if the level of personal protective equipment (PPE) should be upgraded. At this time, it is anticipated that air monitoring will be performed during composting activities for ammonia, methane, hydrogen sulfide, carbon monoxide, and carbon dioxide. Low levels of ammonia will be emitted from the manure used in the composting during the first few weeks of the composting process. Previous pilot scale composting activities (WVOW, Point Pleasant, WV) have shown ambient air quality levels of ammonia remained < 5.0 parts per million (ppm) during composting activities. Carbon dioxide is a product of the degradation process for composting materials. Previous pilot scale composting activities (WVOW, Point Pleasant, WV) have shown ambient air quality levels of carbon dioxide remained <1,000 ppm during composting activities. If aerobic conditions are maintained in the windrows, methane and hydrogen sulfide will not be generated during composting. The requirement for daily windrow turning at the beginning of the composting process which may be lengthened to every other day near the middle of the composting process is sufficient to ensure that aerobic conditions are maintained. Carbon monoxide will be emitted from the windrow turner while it is in operation. Previous pilot scale composting activities (WVOW, Point Pleasant, WV) have shown ambient air quality values for carbon monoxide to be "not detected" directly after use of the windrow turner.

2.2.4.8.1 Exclusion Zones for Various Activities

To ensure safety of site visitors, NASA personnel, and NASA subcontractors, WTI will establish exclusion zones for the soil screening and composting activities. WTI recommends an eighty foot exclusion zone for soil screening activities. The possible exposure hazards associated with screening activities are particulate and nitroaromatic compounds (specifically 2,4- DNT). If necessary, water will be used for dust suppression during screening activities. Suppression of dusts will significantly limit possible exposure during the screening operations. Due to the chemical nature of the nitroaromatics, as well as ambient temperatures expected during screening operations, it is not expected that the nitroaromatics will volatize to levels that will pose a health hazard. It should be noted that the 80-foot exclusion zone is based on the minimum distance recommended in the Emergency Response Guidebook for spills of 2,4-DNT (as a pure compound). The highest concentration of 2,4-DNT in the soil is < 1.0%; therefore, it is believed that the 80-foot distance for the exclusion zone is highly protective of visitor and subcontractor safety. Inside the exclusion zone, within 20 feet of the screen, WTI personnel will wear respiratory protection.

WTI recommends that the same 80-foot exclusion zone be utilized for the composting activities. This distance was chosen based upon the minimum distance for the 2,4-DNT as stated in the previous paragraph. Inside the exclusion zone, within 20 feet of the treatment pad, WTI personnel will wear respiratory protection during the first several weeks of the composting process. Personnel may be able to downgrade the level of PPE as the composting process proceeds depending upon the degradation of nitroaromatics in the soil. It may be necessary to restrict road traffic, if pre-approved by NASA, near the treatment pad to ensure the 80-foot exclusion area. Based upon previous pilot scale activities (WVOW, Point Pleasant, WV), the emissions of ammonia and carbon dioxide from the composting itself have been minor in comparison with OSHA PELs and methane, hydrogen sulfide, and carbon monoxide have not been detected at all.

2.2.4.9 Construction of Water Management System (Task 7I)

Berms shall be constructed around the perimeter of the treatment areas as part of the treatment area's water management system. The berms shall be sized to prevent flood water run on and to contain run off. The water management system shall be designed such that water collected in the sumps can be re-used as contact water during the composting process. Additional water can be obtained from the West Area Redwater Pond, if needed. If necessary, excess water in the sumps may be disposed at the West Area Redwater Pond depending upon sampling results of the water to be discharged. NASA and Ohio EPA will have to review analytical data from water sampling of the sumps prior to allowing discharge in to the West Area Redwater Pond. WTI shall place two to three frac tanks (20,000 gallon capacity) near the sump area to hold sump water until analytical data is available. Furthermore, any discharge to the pond must be done slowly to ensure that no erosion occurs or that sediment is disturbed.

2.2.4.10 Fencing (Task 7J)

The NASA site is a secure site with its own security force. Only standard safety fencing (plastic construction fencing) will be required around the treatment area.

2.2.4.11 Composting Process (Task 7K)

Compost shall be mixed with amendments as determined through bench-scale testing or as directed by the Government's technical representative on the treatment pad. WTI shall then place the material into windrows. Each windrow shall be approximately 24 feet wide and 9 feet high. It is expected that each windrow will be turned daily using an ALLU® AS 38 (24' x 9' tunnel) or similar device; however, when temperatures drop near the end of the composting processing the windrow turning may be performed every other day. Five to six weeks is the anticipated time period for composting to be completed; however, the batch may be completed faster or slower. Laboratory analytical will be used to determine when the batch is completed. Field test kits (TNT EnSys® Soil Test System) for nitroaromatics shall be used to determine progress of the composting process, and verified at least once weekly by analyzing samples by Method 8330.

2.2.4.12 Ultimate Disposal of the Treated Soil (Task 7L)

Upon completion of the soil treatment, the composted soil shall be disposed of in a non-hazardous landfill licensed to accept special waste. The clay layer shall be either used as backfill of the existing excavations or stockpiled for future use. Alternatively, the composted material may be used for backfill at the site if nitroaromatic concentrations are reduced sufficiently to meet remedial goals, or if Ohio EPA grants a variance on the current remedial goals. Composted material will not be used on-site for any purpose without the approval of Ohio EPA, NASA and USACE.

- Amendments will be thoroughly mixed with the contaminated soil. This is necessary for proper bioremediation but it will also decrease emissions.
- The windrows will be kept moist (between 40 and 60% moisture) to reduce the potential for dust emissions as well as prevent possible spontaneous combustion of the windrows.
- The windrows will be turned at least once daily to ensure an appropriate supply of oxygen is provided within the windrows. This will serve to keep the decomposition process aerobic; thus, limiting the odor emissions as well as preventing the formation of methane and hydrogen sulfide. As the composting process progresses, the windrow turning may be decreased to once every two days.

Personnel will be potentially exposed to products brought on the site by WTI. These products include Tornado-50 cleaner, diesel fuel, and acetone. The hazards from nitroaromatic compounds, diesel fuel, Tornado-50 cleaner, and acetone were addressed in the previously approved Final SSHP (WTI, September 2002) and will not be reiterated in this plan. Refer to Table 1 for permissible exposure limits (PELs) and immediately dangerous to life and health (IDLH) limits for all chemical hazards anticipated for the site. Chemical hazards from exposure to carbon dioxide, hydrogen sulfide, ammonia, methane, and carbon monoxide are discussed in Section 3.2.1 through 3.2.5. Material Data Safety Sheets (MSDS) for all chemicals brought on-site by WTI shall be available for review by personnel prior to field mobilization and on-site.

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
Hydrogen sulfide	20 ppm[2]	100 ppm
Ammonia	50 ppm	300 ppm
Carbon monoxide	50 ppm	1200 ppm
Carbon dioxide	5000 ppm	40,000 ppm
Methane	N/A[3]	N/A[3]
Diesel fuel	N/A[3]	N/A[3]
Tornado-50 cleaner	N/A[3]	N/A[3]
Acetone	1000 ppm	N/A[3]

[1]PEL and IDLH values were taken from the NIOSH Pocket Guide to Chemical Hazards, June 1997.
[2]Ceiling level
[3]N/A=not applicable, there is not OSHA PEL or IDLH value for this compound

2.2.4.13 Weekly Treatment Report (Task 7M)

During the operation of the ex situ bioremediation process, weekly reports shall be submitted to the USACE POC via e-mail. These reports shall include all data and observations that pertain to the effectiveness of treatment and shall include representative photos of that weeks operation.

2.2.4.14 Guard Services and Composting Schedule (Task 7N)

Composting is a 7-day a week operation and NASA employees usually do not work on the weekends or holidays. WTI shall coordinate with NASA's security services to ensure site access to accomplish the composting efforts as well as to pay for additional guard services required for deliveries (i.e. straw, sawdust, hay, manure, and backfill) through gates other than the main gate. A controlled deer hunt will held on-site for every Saturday from October 18th through November 22nd during the hours of 7:30 a.m. and 5:00 p.m. During the hours of the controlled deer hunt, WTI personnel will not be on-site. They will perform site activities, such as air monitoring and windrow turning, before or after the hours of 7:30 a.m. and 5:00 p.m. during this time period. WTI will be responsible for coordinating with NASA's security services to ensure site access.

3.0 HAZARD/RISK ANALYSIS

3.1 Activity Hazard Analysis

Appendix A summarizes field activities relating to the new work tasks required under Contract DACW69-030D-007, Work Order 4 that may create or contribute to a hazard and the actions that can be taken to eliminate or minimize each of those hazards. Hazards from performing a site reconnaissance, backfilling of the excavation pits, seeding and mulching, and so forth were discussed in the Final SSHP (WTI, September 2002) and will not be reiterated in this plan.

3.2 Chemical Hazards

The primary chemical hazards associated with these bioremediation activities are exposure to nitroaromatic compounds. Also, personnel will be potentially exposed to gases such as carbon dioxide, hydrogen sulfide, ammonia, and methane, which may be formed as part of the composting process. Additionally, carbon monoxide levels may become elevated between the windrows during turning operations due to exhaust from equipment used to turn the windrows.

Odor emissions are not uncommon during the composting process. Odors are generated by the natural decomposition of the organic material inherent to any compost pile. The use of manure adds to the odor emissions from composting activities. Additionally, if the compost process is allowed to become anaerobic, significant odors and hazardous chemicals (methane and hydrogen sulfide) may be emitted. WTI proposes the following management practices to reduce air emissions from composting activities:

- Stockpiled amendments (straw and chicken manure) will be covered when not in use.
- Every attempt will be made not to overstock amendments.

3.2.1 Methane

Methane is the simplest of all hydrocarbons and is emitted into the atmosphere in quantities larger than any other hydrocarbon. On an annual worldwide basis, the amount of methane from emitted into the atmosphere from natural sources has been estimated to be around 310 million tons. Bacterial decomposition reactions represent the primary source (greater than 50%) of all worldwide methane emissions. Although aerobic conditions should be maintained in the compost, if anaerobic conditions are allowed to develop, methane and hydrogen sulfide may be generated. Some of the chemical and physical properties of methane are as follows:

- Methane has a molecular weight of 16.05 g/mol.
- Naturally occurring Methane is a colorless, odorless, and tasteless gas.
- Methane has a boiling point of -322.7 °F and a flash point of -361.76 °F.
- Methane has a lower explosive limit (LEL) of 5.3% and an upper explosive limit (UEL) of 15%.
- Methane is a simple asphyxiant.
- Methane is a very dangerous fire hazard when exposed to an ignition source and presents an explosion hazard.

Specific routes of exposure are:

- Inhalation

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

- Rapid respiration and air hunger
- Diminished mental alertness
- Impaired muscular coordination
- Depression of senses
- Emotional instability
- Fatigue
- Nausea and vomiting
- Loss of consciousness
- Convulsions
- Deep coma and death

The target organs affected are:

- Respiratory system
- Central nervous system

Emergency First Aid procedures are:

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.

Eye Contact

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

3.2.2 Hydrogen Sulfide

Hydrogen sulfide is a highly toxic gas. It is produced naturally by decaying organic matter. Although aerobic conditions should be maintained in the compost, if anaerobic conditions are allowed to develop, methane and hydrogen sulfide may be generated. 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 can not 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) or 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 are:

- 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
- Paralysis of the respiratory system
- Coma
- Death

The target organs affected by hydrogen sulfide are:

- Eyes
- Respiratory system
- Central nervous system

Emergency First Aid procedures are:

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.

Eye Contact

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

3.2.3 Ammonia

It is typical for ammonia gas to be generated during the composting process. Exposure to ammonia vapors is especially likely during the windrow turning operations. Some of the chemical and physical properties of ammonia are:

- Ammonia is a colorless gas with a pungent, suffocating odor.
- Ammonia has a molecular weight of 17.0 g/mol.
- Ammonia has an upper explosive limit (UEL) of 28% and a lower explosive limit (LEL) of 15%.
- Ammonia is incompatible and/or reactive with strong oxidizers, acids, halogens, and salts of silver and zinc.

Specific routes of exposure to ammonia are:

- Inhalation
- Absorption through eyes and mucous membrane
- Skin absorption

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

- Eye, nose, and throat irritation
- Respiratory irritation
- Bronchial spasms
- Chest pain
- Pulmonary edema
- Skin burns
- Dyspnea

The target organs affected by hydrogen sulfide are:

- Eyes
- Respiratory system
- Skin

Emergency First Aid procedures are:

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.

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.

Eye Contact

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

3.2.4 Carbon Dioxide

Carbon dioxide is generated in copious amounts during the composting process. Carbon dioxide is a simple asphyxiant; therefore, it replaces oxygen in the air. Some of the chemical and physical properties of carbon dioxide are:

- Carbon dioxide is a colorless, odorless gas.
- Carbon dioxide has a molecular weight of 44.0 g/mol.
- Carbon dioxide is a normal constituent of air; however, at elevated concentrations it tends to displace oxygen causing asphyxiation.

Specific routes of exposure to carbon dioxide related to this project are:

- Inhalation

Symptoms a worker may exhibit when exposed to carbon dioxide for this project include, but are not limited to the following:

- Dizziness
- Headache
- Inability to sleep well

The target organs affected by carbon dioxide are:

- Central Nervous System
- Respiratory system

Emergency First Aid procedures are:

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.

3.2.5 Carbon Monoxide

Carbon monoxide is by-product of combustion and will be exhausted by the heavy equipment used on-site. Of particular concern with this chemical is the use of heavy equipment between the windrows where diffusion of carbon monoxide will be limited due to restricted air flow caused by the windrows and by carbon monoxide's inherent chemical/physical properties. Some of the chemical and physical properties of carbon monoxide are as follows:

- Carbon monoxide has a molecular weight of 28.01 g/mol.
- Carbon monoxide is a colorless, odorless gas. It has almost the same density as air; therefore, it won't diffuse by rising.
- Carbon monoxide has a boiling point of -312.7°F.
- The upper explosive limit (UEL) for carbon monoxide is 74.2% and the lower explosive limit (LEL) is 12.5%.
- Carbon monoxide is a poison by inhalation and is an experimental teratogen.
- Carbon monoxide is an asphyxiant, it prevents hemoglobin from binding with oxygen
- Carbon monoxide is a dangerous fire and explosion hazard when exposed to flame.

Specific routes of exposure are:

- Inhalation

Symptoms a worker may exhibit when exposed to carbon monoxide includes, but is not limited to the following:

- Dizziness
- Fatigue
- Headache
- Nausea
- Flu like symptoms

- Confusion
- Auditory disturbances
- Contraction of the visual field
- Heart irregularities
- Edema

The target organs affected are:

- Respiratory system
- Central nervous system

Emergency First Aid procedures are:

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.

3.3 Physical Hazards

The General Safety and Health Plan addressed numerous physical hazards that might be encountered during various projects; however, site-specific conditions could not be addressed in the General Plan and must be addressed in this addendum. WTI anticipates that the following physical hazards will be encountered on this project.

- Heavy Equipment Hazards
- Utility Lines
- Slips, Trips, and Falls
- Lifting Techniques (manual)
- Inclement Weather (heat stress)
- Noise
- Harmful Plants, Animals, and Insects
- Cuts
- Composting Equipment Hazards
- Fire Hazards
- Biological Hazards
- Water Hazards

All of these hazards (except for composting equipment hazards, cuts, fire hazards, and biological hazards) were addressed in the Final SSHP (WTI, September 2002) issued under contract DACW69-00-D-0021, Work Order 020 and will not be fully reiterated in this addendum. This addendum will address site-specific conditions for the above-mentioned physical hazards.

3.3.1 Heavy Equipment Hazards

Heavy equipment usage was addressed in Section 3.3.1 of the Final SSHP (WTI, September 2002) and does not require modification or addition in this addendum to address site-specific concerns.

3.3.2 Utility Lines

Utility line clearance was addressed in Section 3.3.2 of the Final SSHP (WTI, September 2002) and does not require modification or addition in this addendum to address site-specific concerns. However, it is important to stress that a digging permit must be obtained from NASA PBS for all intrusive work. Under no circumstances will intrusive work be performed in areas not pre-approved by NASA PBS.

3.3.3 Slips, Trips, and Falls

Slips, trips, and falls were addressed in Section 3.3.3 of the Final SSHP (WTI, September 2002) and does not require modification or addition in this addendum to address site-specific concerns.

3.3.4 Lifting Techniques

Lifting techniques were addressed in Section 3.3.4 of the Final SSHP (WTI, September 2002) and do not require modification or addition in this addendum to address site-specific concerns.

3.3.5 Inclement Weather Conditions

Inclement weather conditions and heat stress were addressed in Sections 3.3.5 and 3.3.5.1 of the Final SSHP (WTI, September 2002) and do not require modification or addition in this addendum to address site-specific concerns.

3.3.6 Noise

Noise was addressed in Section 3.3.6 of the Final SSHP (WTI, September 2002) and does not require modification or addition in this addendum to address site-specific concerns.

3.3.7 Harmful Plants, Animals, and Insects

Harmful plants, animals, and insects were addressed in Section 3.3.7 of the Final SSHP (WTI, September 2002) and do not require modification or addition in this addendum to address site-specific concerns.

3.3.8 Cuts

Cuts were addressed in Section 3.3.9 of the Final SSHP (WTI, September 2002) and do not require modification or addition in this addendum to address site-specific concerns. Personnel must be cautious when working around the site debris, soil, and amendment materials at their

site. 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.

3.3.9 Composting Equipment Hazards

Composting equipment typically contains powerful mixing flails, knives, or hammers that rotate at a high rate of speed which poses a significant physical hazard for personnel working with and around this equipment. The following safety precautions shall be adhered to for this project:

- Only qualified personnel will operate the composting equipment.
- 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 equipment in area where a potential to hit utilities is present.
- All composting equipment shall be equipped with working audible reverse signal alarms.
- Personnel shall wear Level C PPE (downgrade possible to Level D PPE) and hearing protection as described in Section 5.1 when working near composting equipment.
- All moving or rotating equipment must be guarded to prevent accidental contact.
- Personnel shall only operate the composting equipment with the machine guard in place.
- Whenever a moving machinery part presents a hazard during servicing or maintenance, the engine shall be stopped, the power source disconnected, and all machine movement stopped before servicing or maintenance is performed.
- The mesh or nip points of all power driven gears, belts, chains, sheaves, pulleys, sprockets, and so forth shall be guarded.
- Functional components such as choppers, rotary beaters, mixing augers, feed rolls, conveying augers, and so forth which must be exposed for proper function shall be guarded to the fullest extent which will not substantially interfere with the normal functioning of the component.
- All guards must be free from burrs, sharp edges, and sharp corners. Guards must be securely fastened to the equipment.
- Stones or other foreign objects may forcibly eject from the composting equipment during turning activities.
- Hearing protection is required while operating the compost turner.

3.3.10 Fire Hazards

A possible fire hazard exists because of the stockpiled amendments (hay/straw, wood chips, and so forth) may spontaneously ignite or would burn quickly if ignited from another source. Also, the mixed materials within the windrows may ignite if they overheat. Fires are rarely a problem in outdoor composting operations but they do sometimes occur. Organic material can ignite spontaneously at moisture contents between 25 and 35 percent. The following safety precautions shall be taken:

- Amendment stockpiles and the windrows containing the mixed soil and amendments will be watered daily, during dry conditions, to keep a high level of moisture present.

- The windrows and stockpiles will be kept at a height of 10 feet or less to inhibit the buildup of excess internal heat.
- In order to keep aerobic conditions within the windrow, the windrows are required to be turned daily. This daily turning will inhibit the buildup of internal heat; therefore, contributing to fire protection. The amendment stockpiles until used will be turned two to three times a week to inhibit the buildup of internal heat, which may cause spontaneous combustion.
- A vacuum truck filled with water will be present on-site at the treatment pad area. This truck will be used for fire suppression.
- WTI will coordinate with the NASA Plum Brook personnel to arrange a pre-fire plan with the Perkins Fire Department.
- At a minimum, there will be two 20,000 gallon Frac tanks located near the treatment pad, in the event of a fire in the windrows, water from these tanks or from the sumps can be used. The water in the tanks may contain some nitroaromatics, but not in sufficient concentration to be a concern for fire application uses.

3.3.11 Biological Hazards

A potential exists for personnel to be exposed to biological hazards associated with the amendment materials (manure and straw). There is potential exposure to bacteria, molds, and parasites. Mold spores are produced by microorganisms, which grow when the moisture content is at least 30 percent and the temperature reaches 70 degrees Fahrenheit. Many forms of bacteria thrive at warm, moist conditions that will be found in the composting material. Therefore, potential exposure to various molds and bacteria is likely. When the amendment material is moved, billions of microscopic sized particles become airborne and attach themselves to dust particles. These dust particles with the attached microorganisms pass through the body's natural filtering mechanisms and accumulates in the lungs where they can cause an allergic type of pneumonia. Repeated attacks can lead to scarring of lung tissue which impairs it function. Exposure to mold spores and bacteria may produce the following symptoms:

- Shortness of breath
- Tightness in the chest
- Fatigue
- A dry cough
- Muscle aches
- Headaches
- Chills

Perhaps the best management practice to help limit or prevent exposure to mold and bacteria is to prevent the moisture content of the material from rising to 30 % or more. However, due to the nature of the project, this is not feasible. It may be possible to initially cover the stockpiled amendments prior to mixing with the soil; however, they may eventually be mixed and exposed not only to rainwater but also to the addition of water necessary for the composting process. Since it is not feasible to keep the material below 30% in moisture content, WTI proposes to wet the amendments prior to mixing with the soil and to wet the windrows prior to mixing them on a daily basis. By wetting the materials, the dust levels should be kept to a minimum; therefore, limiting exposure.

Exposure to parasites is expected to be low. Pig manure will not be used due to the number of parasites in that species that can be easily transmitted to humans. Chicken or cow manure will be used. Even though parasites are likely to be present in chicken and cow manure their transmission to humans is generally considered to be less than the transmission of parasites from other animals such as cats, dogs, and pigs.

Personnel will be equipped with air purifying respirators equipped with HEPA filters, which can be worn if dust generation becomes a problem. Good hygiene practices are necessary to prevent exposure by ingestion. All food and drink shall be consumed away from the work area after proper decontamination procedures have been followed. Also, personnel shall not smoke in the work area and shall not smoke until they have performed proper decontamination.

3.3.12 Water Hazard

Water hazards are not expected to be a major hazard; however, a potential exists that personnel removing water from the excavation pits prior to backfilling the pits may fall into water that has filled or partially filled the pits. Additionally, personnel may fall into the West Area Redwater Pond when they are disposing of pit water or possible obtaining water to put on the windrows. The following safety precautions shall be taken, wherever there is a potential for a drowning hazard.

- WTI will assign personnel (subcontractors and WTI personnel) who know how to swim to perform work along the edges of any pits or reservoirs where there is a potential for personnel to fall into the water.
- Work shall not be performed alone.
- Personnel working near water where a drowning hazard is present will be equipped with a minimum of one throwable PFD that is attached to a polypropylene, or equivalent rope.
- Wherever there is a potential for a drowning hazard, personnel shall wear Type III, Type V, or better US Coast Guard approved International Orange personal flotation devices (PFDs).
- Before and after each use, the PFD shall be inspected for defects that would alter its strength or buoyancy.
- Defective devices or devices with less than 13 pounds of buoyancy shall be removed from service.
- All PFDs shall be equipped with retro-reflective tape.

3.4 Accident Prevention

WTI 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, WTI 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.

4.0 CONTRACTOR PROJECT ORGANIZATION

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
	(cellular phone)	(304) 617-1461

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

NASA POC	Phone Number
Amy Bower	(419) 621-3233
Robert Lallier	(419) 621-3234

C. **Contractor's Project Manager** – The WTI 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.

WTI 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. Due to the fact that composting requires personnel on-site 7-days a week, WTI will utilize two on-site supervisors to perform the work. The on-site supervisors will be rotated at the site.

On-site Supervisor		Phone Number
Zatto Hager		(304) 755-8448
	Cellular phone	(304) 544-5840
Ronald Evans		(304) 755-8448
	Cellular phone	(304) 542-0505

E. **Site Safety and Health Officers (SSHO)** – The SSHO will be responsible for safety on site. Andrea Thomas from Pinnacle Environmental, a company specializing in safety and health issues, will serve as the safety officer. At a later date and with the approval of the USACE and NASA, Pinnacle Environmental may add another SSHO on a rotating basis.

SSHO	Phone Number
Andrea Thomas	(304) 757-5204
Mindy L. Tilly	

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 shall be responsible for sampling activities and field screening of samples. Due to the nature of the project, WTI shall utilize two QC officers who will serve on a rotational basis.

WTI QC Officer	Phone Number
Senah Gussler	(304) 755-8448
Rodney Roberts	(304) 755-8448

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

WTI Field Personnel	Phone Number
Eddie Anderson	(304) 755-8448
Gary Henry	
Lynn Moles	
Chester Porter	
Malcolm Slone	
Dwayne James	
Keith Meeks	
David John Walker	

H. **WTI'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. The IQCT may perform on-site QC audits.

WTI Independent Quality Control Team	Phone Number
Joseph Wheeler	(304) 755-8448
Julie Glockner	(740) 574-6144

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 may be disposed of at the Erie County Landfill and at the BFI Ottawa County Landfill.

Landfills	Phone Number
Fred Dobbert (Erie County)	(419) 433-3624
Rosana Marinchick (Ottawa County)	(440) 774-4808

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. **EQ Environmental**—The hazardous disposal facility for hazardous soil and/or IDW is EQ Environmental located in Michigan.

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

M. **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

N. **Eco First**—This company will be responsible for the transportation of any hazardous liquid IDW to EQ Environmental for disposal.

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

O. **Meyers Dairy Farm**- This company will provide and deliver all of the amendments used in the ex situ composting.

Meyers Dairy Farm Contact	Phone Number
Dewey Meyers	419-945-2651

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 clearing/grubbing operations and preparation of the treatment/amendment pads. Due to the high concentrations of nitroaromatics in the stockpiled soil, personnel will initially be required to wear Level C PPE while performing composting activities. As composting progresses and nitroaromatic concentrations decrease as shown by laboratory testing of the soil samples, the SSHO may issue a downgrade from Level C PPE to Level D PPE for composting activities. Exclusion zones will be created for the screening and

composting activities to ensure that NASA personnel, site visitors, or NASA subcontractors do not enter a potentially hazardous area. Water will be used as dust suppressant, if necessary, to limit dust emissions during screening operations. If air monitoring data from composting activities reveal that a contaminant is at or near the PEL, the WTI SSHO will immediately notify the NASA Plum Brook Safety Office and the NASA POC.

Air monitoring will be performed for methane, hydrogen sulfide, carbon dioxide, ammonia, and carbon monoxide in the area of the windrows during composting activities. Ammonia cartridges will be available on-site for use. If methane, hydrogen sulfide, carbon dioxide or carbon monoxide is detected near their respective PEL level, then personnel will be required to upgrade to Level B PPE using a supplied air respirator since these contaminants cannot be removed through the use of chemical cartridges. It is considered unlikely, based upon previous monitoring data from similar activities, that Level B PPE will be needed. The following is a description of the required PPE for the project:

Level D PPE will consist of:

- Steel toe safety shoes
- Safety glasses with side shields
- Leather gloves (general site work)
- Hard hat
- Hearing protection (when working around heavy equipment, or composting equipment)
- Long trousers and sleeved shirt

Level C PPE will consist of:

- Full Face or Half-face Air Purifying Respirator (NIOSH approved)
- Organic vapor, ammonia, and HEPA cartridges should be available (initial use of organic vapor and HEPA cartridges are anticipated, ammonia will be monitored for but is not expected to exceed action levels based upon previous monitoring of similar activities)
- Chemical resistant work gloves when handling contaminated soil
- Steel toed safety boots/shoes
- Face shield or safety goggles to be used with half-faced respirator
- Hard hat
- Hearing protection (when working around heavy equipment, or composting equipment
- Tyvek overalls (optional if contact with contaminated soil is not likely)

Level B PPE will consist of:

- Tyvek overalls
- Full race air supplied respirator (NIOSH approved)
- Chemical resistant inner and outer work gloves
- Steel toed safety boots/shoes
- Hard hat
- Hearing protection (when working around heavy equipment, or composting equipment)

5.1.1 Reassessment of Protection Program

Pursuant to the approved Final SSHP (WTI, September 2002), the level of PPE protection shall be changed based upon change in site conditions, findings of investigations, and/or changes in the tasks to be performed.

5.2 Safety Equipment

At a minimum, a waterproof 16-unit first aid kit shall be available on site in the work zone. There shall be at minimum two fire extinguishers, a portable eyewash station, personnel decontamination materials, rakes and shovels for firefighting. The on-site Supervisor will perform a daily check to assure that the safety equipment is present and in good working condition.

5.3 Exposure Monitoring

WTI personnel will use a GasTech Model 402 combustible gas meter, or comparable instrument, to determine the lower explosive limit (LEL), oxygen, hydrogen sulfide and carbon monoxide levels. Oxygen levels will be tested first as oxygen deficient atmospheres may cause false LEL readings. Ammonia and carbon dioxide levels will be tested using a Drager® pump and appropriate tubes.

5.4 Medical Surveillance Program

WTI's field personnel undergo annual medical surveillance examinations and random drug testing as described in the approved Final SSHP (WTI, September 2002).

5.5 Illumination

Work will be performed during daylight hours only.

5.6 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

5.7 Training

All field personnel performing work on this project have received forty- (40) hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training and annual 8-hour updates. All field personnel 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 CPR training.

All field personnel shall receive training and guidance concerning the provisions of this SSHP Addendum and the Final SSHP (WTI, September 2002). Training will specifically address the activities, procedures, equipment, and hazard analysis for composting operations. The SSHO and Project Manager shall provide this training and it will allow personnel to ask questions, clarify misunderstandings, and reinforce their previous safety and health training.

6.0 SITE CONTROL MEASURES

Site control measures were addressed in Section 6.0 of the Final SSHP (WTI, September 2002) and do not require modification of addition in this addendum.

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.

- **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 and Level B 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

The steps of the decontamination process for heavy equipment (backhoe, windrow turner, so forth) will be as follows:

- Brush off the equipment to remove gross contamination
- Wash equipment with soap and water using a pressure washer
- Rinse equipment with uncontaminated water

Heavy equipment will not be decontaminated until it is ready to be removed from the site or it is going to be used in an uncontaminated area. A decontamination pad will be constructed for collection of the decontamination fluids. Unless approved by the USACE and NASA, equipment should not be decontaminated into the on-site sumps because of the use of soap in the decontamination process.

Laboratory equipment (pipets, cuvettes, beakers, and so forth), as appropriate, associated with the field screening will be decontaminated. Disposable pipets may be used. Cleaning of laboratory equipment shall be as follows:

- Wash lab equipment with soap and water
- Rinse lab equipment with a triple distilled water rinse
- Rinse lab equipment with acetone (solvent used in the field test kits)

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)

The disposition of investigation derived waste (IDW) was addressed in Section 7.3 of the Final SSHP (WTI, September 2002) and does not require modification or addition in this addendum to address site-specific concerns.

8.0 EMERGENCY RESPONSE AND CONTINGENCY PLAN

The emergency response and contingency plan was addressed in Section 8.0 of the Final SSHP (WTI, September 2002) and requires minor modification in this addendum to update the emergency contact list. Furthermore, it must be reiterated that the NASA PBS protocol must be followed during all emergency response activities. Field personnel are to contact the main gate and the security personnel will may all other contacts for emergency response. WTI personnel and subcontractors are required by NASA to review a safety video and orientation prior to performing any on-site activities. The police, fire, and ambulance may be contacted through the numbers listed below or may simply be contacting the NASA PBS guards by radio.

8.1 Emergency Contacts

Contact	Organization	Telephone
Police	---	(419) 621-3222
Ambulance	---	(419) 621-3222
Fire	---	(419) 621-3222
Hospital	Firelands Regional Medical Center	(419) 609-0558
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
Steve Arbogast	WTI	(304) 755-8448
	(cellular phone)	(304) 389-9580
Zatto Hager	WTI	(304) 755-8448
	(cellular phone)	(304) 544-5840
Ronald Evans	WTI	(304) 755-8448
	(cellular phone)	(304) 542-0505

The Firelands Regional Medical Center is located at 911 Decatur Street, Sandusky, Ohio. All field personnel shall become familiar with the route to the hospital. Appendix D contains a map showing the location of the hospital and evacuation routes for this area.

9.0 RECORD KEEPING

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

- Copy of the Final SSHP (WTI, September 2002) and this Addendum
- 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.

"Final Site-Specific Safety and Health Plan, Stabilization, Excavation and Disposal of Contaminated Soil, Plum Brook Ordnance Works, Sandusky, Ohio," WTI, September 2002

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

APPENDIX A ACTIVITY HAZARD ANALYSIS

Hazard Analysis

Activity **Relocation of Tankers** **Reviewed by/date** **RMP/ 08/18/03**

Principal Steps	Potential Hazards	Recommended Controls
Relocation of Tankers	Personnel may be injured when moving the tankers.	• Trucks used to the move the tankers 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 the trucks and moving the tankers is prohibited. • All trucks used to move the tankers shall be equipped with working audible reverse signal alarms
	Wet or muddy surfaces may create a tripping hazard.	• Be alert and observe terrain while walking. • Wear appropriate footwear. • Personnel will avoid walking through or working in water or mud. • Personnel will avoid climbing over the tankers.
	Personnel may come into contact with or inhale potentially high concentration of chemicals during tanker relocation activities.	• Personnel shall have the PBS Safety Officer confirm that each of the tankers are empty or that they pose no threat to move. • Personnel will wear appropriate PPE, as determined by WTI's SSHP in consultation with the PBS safety Officer, if necessary, to avoid exposure to chemicals during the relocation of the tanks.
	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

Equipment to be used	Inspection Requirements	Training Requirements
Level D PPE unless otherwise specified by the SSHO. Tanker trucks and tanks.	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR, and First Aid

Hazard Analysis

Activity **Clearing and Grubbing Activities** **Reviewed by/date** **RMP/ 08/18/03**

Principal Steps	Potential Hazards	Recommended Controls
Clearing and grubbing may be performed prior to construction of the treatment pad and drainage system.	Wet or muddy surfaces may create a tripping hazard.	• Be alert and observe terrain while walking. • Wear appropriate footwear. • 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. • 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. • Insect repellant may be used.
	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
	Personnel may be cut or scratched badly during clearing and grubbing operations.	• 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.

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 **Treatment Pad/Drainage System Construction** **Reviewed by/date** **RMP/ 08/18/03**

Principal Steps	Potential Hazards	Recommended Controls
Construction of the treatment pad.	Personnel may be injured by heavy equipment used in the construction of the treatment pad 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. • Wear appropriate footwear. • 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. • 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. • Insect repellant may be used.

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 **Treatment Pad/Drainage System Construction** **Reviewed by/date** **RMP/ 08/18/03**

Principal Steps	Potential Hazards	Recommended Controls
Construction of the treatment pad.	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
	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.	• 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 and the composting equipment.

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 **Sampling and Decontamination** **Reviewed by/date** **RMP 08/18/03**

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 and decontamination.	• Potential chemical contaminants at a site shall be reviewed prior to sampling. • 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.
	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
	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).

Equipment to be used	Inspection Requirements	Training Requirements
Level C PPE will be used initially with a possible downgrade to Level D PPE. Hearing protection is required around heavy equipment. Sampling containers, gloves, shovel, pressure washer, soap and water.	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR, First Aid

Hazard Analysis

Activity **Sampling and Decontamination** **Reviewed by/date** **RMP/08-18-03**

Principal Steps	Potential Hazards	Recommended Controls
Personnel will perform sampling.	Wet or muddy surfaces may create a tripping hazard.	• Be alert and observe terrain while walking. • Wear appropriate footwear. • 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 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.
	Materials with sharp edges are likely to be encountered and may pose a potential cutting hazard.	• 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.

Equipment to be used	Inspection Requirements	Training Requirements
Level C PPE will be used initially with a possible downgrade to Level D PPE. Hearing protection is required around heavy equipment. Sampling containers, gloves, shovel, pressure washer, soap and water.	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR, First Aid

Hazard Analysis

Activity **Contaminated Soil Relocation** **Reviewed by/date** **RMP/ 08/18/03**

Principal Steps	Potential Hazards	Recommended Controls
Contaminated soil will be relocated from its current location to the treatment area.	Personnel may be injured by heavy equipment used in the loading and relocation 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.
	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
	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).

Equipment to be used	Inspection Requirements	Training Requirements
Level C PPE will be used initially with a possible downgrade to Level D PPE. Hearing protection is required around heavy equipment	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR, and First Aid

Hazard Analysis

Activity **Contaminated Soil Relocation** **Reviewed by/date** **RMP/ 05/2/02**

Principal Steps	Potential Hazards	Recommended Controls
Contaminated soil will be relocated from its current location to the treatment area.	Personnel may come into contact with or inhale potentially high concentration of contaminants during contaminated soil relocation activities.	• Potential chemical contaminants at a site shall be reviewed prior to performing work. • Personnel are required to wear the assigned level of PPE. Level C PPE shall be worn during the loading and unloading of the stockpiled material.
	Wet or muddy surfaces may create a tripping hazard.	• Be alert and observe terrain while walking. • Wear appropriate footwear. • 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. • 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. • Insect repellant may be used.
	Materials with sharp edges are likely to be encountered and may pose a potential cutting hazard.	• 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 C PPE will be used initially with a possible downgrade to Level D PPE. Hearing protection is required around heavy equipment	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR, and First Aid

Hazard Analysis

Activity **Composting Activities** **Reviewed by/date** **RMP/ 08/18/03**

Principal Steps	Potential Hazards	Recommended Controls
Personnel will be mixing amendments and contaminated soil	Personnel may be injured by heavy equipment (trucks and end loader used to move or stockpile amendments).	• 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
	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).

Equipment to be used	Inspection Requirements	Training Requirements
Level C PPE with potential downgrade to Level D, hearing protection, heavy equipment (excavator, trucks, backhoe, etc.), ALLU AS 38 or equivalent composting equipment	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR, and First Aid

Hazard Analysis

Activity **Composting Activities** **Reviewed by/date** **RMP/ 08/18/03**

Principal Steps	Potential Hazards	Recommended Controls
Personnel will be mixing amendments and contaminated soil	Personnel may be injured by the composting equipment that is used to mix the materials and to turn the windrows.	• Only qualified personnel will operate the composting equipment. • 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 equipment in area where a potential to hit utilities is present. • All composting equipment shall be equipped with working audible reverse signal alarms. • Personnel shall wear hearing protection when working near composting equipment. • All moving or rotating equipment must be guarded to prevent accidental contact. • Personnel shall only operate the composting equipment with the machine guard in place. • Whenever a moving machinery part presents a hazard during servicing or maintenance, the engine shall be stopped, the power source disconnected, and all machine movement stopped before servicing or maintenance is performed. • The mesh or nip points of all power driven gears, belts, chains, sheaves, pulleys, sprockets, and so forth shall be guarded. • Functional components such as choppers, rotary beaters, mixing augers, feed rolls, conveying augers, and so forth which must be exposed for proper function shall be guarded to the fullest extent which will not substantially interfere with the normal functioning of the component. • All guards must be free from burrs, sharp edges, and sharp corners. Guards must be securely fastened to the equipment. • Stones or other foreign objects may forcibly eject from the composting equipment during turning activities.

Equipment to be used	Inspection Requirements	Training Requirements
Level C PPE with potential downgrade to Level D, hearing protection, heavy equipment (excavator, trucks, backhoe, etc.), ALLU AS 38 or equivalent composting equipment	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR, and First Aid

Hazard Analysis

Activity **Composting Activities** **Reviewed by/date** **RMP/ 08/18/03**

Principal Steps	Potential Hazards	Recommended Controls
Personnel will be acquiring water and placing water on the windrows and stockpiles	Personnel may fall into a pond (if it is used as a source of water or if the sump contents are discharged to the pond).	• WTI will assign personnel (subcontractors and WasteTron personnel) who know how to swim to perform work along the edges of any pits or reservoirs where there is a potential for personnel to fall into the water. • Work shall not be performed alone. • Personnel working near water where a drowning hazard is present will be equipped with a minimum of one throwable PFD that is attached to a polypropylene, or equivalent rope. • Wherever there is a potential for a drowning hazard, personnel shall wear US Coast Guard approved International Orange personal flotation devices (PFDs). • Before and after each use, the PFD shall be inspected for defects that would alter its strength or buoyancy. • Defective devices or devices with less than 13 pounds of buoyancy shall be removed from service. • All PFDs shall be equipped with retro-reflective tape.
Personnel will be performing composting activities	Personnel may come into contact with or inhale potentially high concentration of soil contaminants or decomposition products during composting activities.	• Potential chemical contaminants at a site shall be reviewed prior to performing work. • Personnel are required to wear the assigned level of PPE. • Personnel shall be careful when containerizing the decontamination waste so as not to further expose themselves. • Air monitoring will be performed
	Wet or muddy surfaces may create a tripping hazard.	• Be alert and observe terrain while walking. • Wear appropriate footwear. • 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 are likely to be encountered and may pose a potential cutting hazard.	• 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.

Equipment to be used	Inspection Requirements	Training Requirements
Level C PPE with potential downgrade to Level D, hearing protection, heavy equipment (excavator, trucks, backhoe, etc.), ALLU AS 38 or equivalent composting equipment	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR, and First Aid

Hazard Analysis

Activity **Composting Activities** **Reviewed by/date** **RMP/ 08/18/03**

Principal Steps	Potential Hazards	Recommended Controls
Personnel will be performing composting activities	Personnel may be exposed to noise levels that will potentially harm their hearing.	Personnel shall wear hearing protection when working near heavy equipment, the drilling rig, and the composting equipment.
	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 except 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/SSHO prior to work.
	A possible fire hazard exists because of the stockpiled amendments (hay/straw, wood chips, and so forth) may spontaneously ignite or would burn quickly if ignited from another source.	• Amendment stockpiles and the windrows containing the mixed soil and amendments will be watered daily to keep a high level of moisture present. • The windrows and stockpiles will be kept at a height of 10 feet or less to inhibit the buildup of excess internal heat. • In order to keep aerobic conditions within the windrow, the windrows are required to be turned daily. This daily turning will inhibit the buildup of internal heat; therefore, contributing to fire protection. The amendment stockpiles until used will be turned two to three times a week to inhibit the buildup of internal heat, which may cause spontaneous combustion. • A vacuum truck filled with water will be present on-site at the treatment pad area. This truck will be used for fire suppression.
	Personnel will potentially be exposed to mold spores, bacteria, and parasite.	• The amendment materials shall be wetted prior to mixing to reduce potential dust generation. • The windrows will be wetted prior to turning to limit generation of dust. • Personnel will be equipped with air purifying respirators with HEPA filters. • Personnel will be required to wash prior to eating, drinking, or smoking.

Equipment to be used	Inspection Requirements	Training Requirements
Level C PPE with potential downgrade to Level D, hearing protection, heavy equipment (excavator, trucks, backhoe, etc.), ALLU AS 38 or equivalent composting equipment	Refer to PPE Checklist in Appendix C	40 hour HAZWOPER training, CPR, and First Aid

APPENDIX B TRAINING CERTIFICATES

Certificate of Achievement

Sharp Safety S
LLC

This certificate is presented to:

SHARP

SENAH GUSSLER

[illegible] Individual has attended and successfully passed a 40 Hour HAZWOPER
[illegible]ation Course. This course is in compliance with OSHA 29 CFR 19[illegible]

Signature

2-2-2001
Date

Sharp Safety Services

Dwayne James — Hazwoper 40 Hour Course

SS# 236-80-4195

has completed the requirements

for certification in OSHA 29 CFR 1910.120

on: *July 13, 2001*

Instructor: _____

P.O. Box 7170 Cross Lanes, WV 25356

Hazwoper Rules
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

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

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

KEITH MEEKS

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

Sharp Safety Services

Keith Meeks — Hazwoper 40 Hour Course

SS# 232-92-1546
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: May 7, 2001

Instructor:

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

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 1 7 2001
Date

THIS IS TO CERTIFY THAT

RODNEY ROBERTS

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

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, 1995

232-25-0910

SOCIAL SECURITY NO.

RTC DIRECTOR

This is to certify that
JOHNNIE ANDERSON
has successfully completed in accordance with OSHA 1910.120 the (Hazardous Waste Operations and Emergency Response)

40 HOUR HAZWOPER

Beverly A. Garrett
Director

This Badge is the Property of:
The Regulatory Training Center
157 Second Avenue
South Charleston, WV 25303

R T C
Regulatory Training Center
HAZWOPER TRAINING

ANDERSON, JOHNNIE
ID: 234037
WTI
Date Trained:
4/25/2003

sharp safety services,llc

David Adkins — Hazwoper 8 Hour Refresher

SS# 235-33-1412
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

David Beam — Hazwoper 8 Hour Refresher

SS# 282-60-4458
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

Jeff Cooper — Hazwoper 8 Hour Refresher

SS# 234-15-4476
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

Mike Evans — Hazwoper 8 Hour Refresher

SS# 235-90-9859
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

Laundell Finley — Hazwoper 8 Hour Refresher

SS# 235-25-4488
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

Zatto Hager — Hazwoper 8 Hour Refresher

SS# 234-29-5155
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

Gary Henry — Hazwoper 8 Hour Refresher

SS# 235-04-5503
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

Dwayne James — Hazwoper 8 Hour Refresher

SS# 236-80-4195
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

George Linville — Hazwoper 8 Hour Refresher

SS# 233-13-1615
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

Keith Meeks — Hazwoper 8 Hour Refresher

SS# 232-92-1546
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

FEED THIS END

FOLD BACK AND FORTH ALONG PERFORATION FOR EASY SEPARATION

Avery Jet Business Card #8371

FEED THIS F

sharp safety services,llc

Gene Wheeler — Hazwoper 8 Hour Refresher

SS# 274-72-4783
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

Ronald Evans — Hazwoper 8 Hour Refresher

SS# 233-11-7861
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

FEED THIS END

sharp safety services,llc

Danny Moore — Hazwoper 8 Hour Refresher

SS# 236-13-1843
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

Eric Foster — Hazwoper 8 Hour Refresher

SS# 285-64-7128
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

Julie Glockner — Hazwoper 8 Hour Refresher

SS# 287-80-1818
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

Charles Salmons — Hazwoper 8 Hour Refresher

SS# 236-70-1617
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

FOLD BACK AND FORTH ALONG PERFORATION FOR EASY SEPARATION

sharp safety services,llc

Senah Gussler — Hazwoper 8 Hour Refresher

SS# 280-88-1227
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

Paul Wanstreet — Hazwoper 8 Hour Refresher

SS# 233-25-1506
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

Avery Ink Jet Business Card #8377

sharp safety services,llc

Ray Lutes — Hazwoper 8 Hour Refresher

SS# 233-84-6042
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

Frank Knotts — Hazwoper 8 Hour Refresher

SS# 233-82-4986
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

FEED THIS

sharp safety services,llc

Mark Meadows — Haxwoper 8 Hour Refresher

SS# 233-13-4780
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

Lynn Moles — Haxwoper 8 Hour Refresher

SS# 234-94-2636
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

FEED THIS END

sharp safety services,llc

Ruth Porter — Haxwoper 8 Hour Refresher

SS# 235-98-4697
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

Chester Porter — Haxwoper 8 Hour Refresher

SS# 233-02-3162
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

Rodney Roberts — Haxwoper 8 Hour Refresher

SS# 236-19-3043
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

Paul Saluja — Haxwoper 8 Hour Refresher

SS# 234-13-9614
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

Avery Ink Jet Business Card #8377

sharp safety services,llc

Malcom Sloan — Haxwoper 8 Hour Refresher

SS# 232-25-0910
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

David Walker — Haxwoper 8 Hour Refresher

SS# 434-71-6113
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

FOLD BACK AND FORTH ALONG PERFORATION FOR EASY SEPARATION

sharp safety services,llc

Joe Wheeler — Haxwoper 8 Hour Refresher

SS# 235-15-4123
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

sharp safety services,llc

Ryan Wheeler — Haxwoper 8 Hour Refresher

SS# 236-31-7733
has completed the requirements
for certification in OSHA 29 CFR 1910.120
on: *01-24-03*.

Instructor: _____
P.O. Box 7170 Cross Lanes, WV 25356

American Heart Association.
Fighting Heart Disease and Stroke

Heartsaver AED

Lynn D. Moles

This card certifies that the above individual has successfully completed the national cognitive and skills evaluations in accordance with the curriculum of the AHA for the Heartsaver AED Program. Adult AED & CPR / Pediatric CPR

03/21/03 — Issue Date

03/2005 — Recommended Renewal Date

American Heart Association.
Fighting Heart Disease and Stroke

Heartsaver AED

Ray E. Lutes

This card certifies that the above individual has successfully completed the national cognitive and skills evaluations in accordance with the curriculum of the AHA for the Heartsaver AED Program. Adult AED & CPR / Pediatric CPR

03/21/03 — Issue Date

03/2005 — Recommended Renewal Date

American Heart Association.
Fighting Heart Disease and Stroke

Heartsaver AED

Senah Gussler

This card certifies that the above individual has successfully completed the national cognitive and skills evaluations in accordance with the curriculum of the AHA for the Heartsaver AED Program. Adult AED & CPR / Pediatric CPR

03/21/03 — Issue Date

03/2005 — Recommended Renewal Date

American Heart Association.
Fighting Heart Disease and Stroke

Heartsaver AED

Gary Henry

This card certifies that the above individual has successfully completed the national cognitive and skills evaluations in accordance with the curriculum of the AHA for the Heartsaver AED Program. Adult AED & CPR / Pediatric CPR

03/21/03 — Issue Date

03/2005 — Recommended Renewal Date

American Heart Association.
Fighting Heart Disease and Stroke

Heartsaver AED

David Walker

This card certifies that the above individual has successfully completed the national cognitive and skills evaluations in accordance with the curriculum of the AHA for the Heartsaver AED Program. Adult AED & CPR / Pediatric CPR

03/21/03 — Issue Date

03/2005 — Recommended Renewal Date

American Heart Association.
Fighting Heart Disease and Stroke

Heartsaver AED

Darrell Salmons

This card certifies that the above individual has successfully completed the national cognitive and skills evaluations in accordance with the curriculum of the AHA for the Heartsaver AED Program. Adult AED & CPR / Pediatric CPR

03/21/03 — Issue Date

03/2005 — Recommended Renewal Date

American Heart Association.
Fighting Heart Disease and Stroke

Heartsaver AED

Gene Wheeler

This card certifies that the above individual has successfully completed the national cognitive and skills evaluations in accordance with the curriculum of the AHA for the Heartsaver AED Program. Adult AED & CPR / Pediatric CPR

03/21/03 — Issue Date

03/2005 — Recommended Renewal Date

American Heart Association.
Fighting Heart Disease and Stroke

Heartsaver AED

Michael Evans

This card certifies that the above individual has successfully completed the national cognitive and skills evaluations in accordance with the curriculum of the AHA for the Heartsaver AED Program. Adult AED & CPR / Pediatric CPR

03/21/03	03/2005
Issue Date	Recommended Renewal Date

American Heart Association.
Fighting Heart Disease and Stroke

Heartsaver AED

Rodney Roberts

This card certifies that the above individual has successfully completed the national cognitive and skills evaluations in accordance with the curriculum of the AHA for the Heartsaver AED Program. Adult AED & CPR / Pediatric CPR

03/21/03	03/2005
Issue Date	Recommended Renewal Date

American Heart Association.
Fighting Heart Disease and Stroke

Heartsaver AED

Dwayne James

This card certifies that the above individual has successfully completed the national cognitive and skills evaluations in accordance with the curriculum of the AHA for the Heartsaver AED Program. Adult AED & CPR / Pediatric CPR

03/21/03	03/2005
Issue Date	Recommended Renewal Date

American Heart Association.
Fighting Heart Disease and Stroke

Heartsaver AED

Keith Meeks

This card certifies that the above individual has successfully completed the national cognitive and skills evaluations in accordance with the curriculum of the AHA for the Heartsaver AED Program. Adult AED & CPR / Pediatric CPR

03/21/03	03/2005
Issue Date	Recommended Renewal Date

American Heart Association.
Fighting Heart Disease and Stroke

Heartsaver AED

Chester H. Porter

This card certifies that the above individual has successfully completed the national cognitive and skills evaluations in accordance with the curriculum of the AHA for the Heartsaver AED Program. Adult AED & CPR / Pediatric CPR

03/21/03	03/2005
Issue Date	Recommended Renewal Date

American Heart Association.
Fighting Heart Disease and Stroke

Heartsaver AED

Ruth Porter

This card certifies that the above individual has successfully completed the national cognitive and skills evaluations in accordance with the curriculum of the AHA for the Heartsaver AED Program. Adult AED & CPR / Pediatric CPR

03/21/03	03/2005
Issue Date	Recommended Renewal Date

American Heart Association.
Fighting Heart Disease and Stroke

Heartsaver AED

Danny Moore

This card certifies that the above individual has successfully completed the national cognitive and skills evaluations in accordance with the curriculum of the AHA for the Heartsaver AED Program. Adult AED & CPR / Pediatric CPR

03/21/03	03/2005
Issue Date	Recommended Renewal Date

American Heart Association.
Fighting Heart Disease and Stroke

Heartsaver AED

Ronald Evans

This card certifies that the above individual has successfully completed the national cognitive and skills evaluations in accordance with the curriculum of the AHA for the Heartsaver AED Program. Adult AED & CPR / Pediatric CPR

03/21/03	03/2005
Issue Date	Recommended Renewal Date

American Heart Association

Fighting Heart Disease and Stroke

Heartsaver AED

Johnnie E. Anderson

This card certifies that the above individual has successfully completed the national cognitive and skills evaluations in accordance with the curriculum of the AHA for the Heartsaver AED Program. Adult AED & CPR / Pediatric CPR

04/16/03	04/2005
Issue Date	Recommended Renewal Date

HEART SAVER

American Heart Association

Doug Trout

has participated in an American Heart Association Heartsaver Course.

03/15/02 — Issue Date

02/2004 — Recommended Renewal Date

HEART SAVER

American Heart Association

David Beam

has participated in an American Heart Association Heartsaver Course.

03/15/02 — Issue Date

03/2004 — Recommended Renewal Date

HEART SAVER

American Heart Association

Chris Burke

has participated in an American Heart Association Heartsaver Course.

03/15/02 — Issue Date

03/2004 — Recommended Renewal Date

HEART SAVER

American Heart Association

Julie Glockner

has participated in an American Heart Association Heartsaver Course.

03/15/02 — Issue Date

03/2004 — Recommended Renewal Date

HEART SAVER

American Heart Association

Doug A. Myers

has participated in an American Heart Association Heartsaver Course.

03/15/02 — Issue Date

03/2004 — Recommended Renewal Date

HEART SAVER

American Heart Association

Senah Gussler

has participated in an American Heart Association Heartsaver Course.

03/15/02 — Issue Date

03/2004 — Recommended Renewal Date

American Red Cross
We'll be there.

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.

American Red Cross
We'll be there.

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.

American Red Cross
We'll be there.

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.

American Red Cross
We'll be there.

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.

American Red Cross
We'll be there.

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.

American Red Cross
We'll be there.

This recognizes that
Chester Porter
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 dat

American Red Cross
We'll be there.

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

American Red Cross
We'll be there.

This recognizes that
Keith Meeks
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

American Red Cross
We'll be there.

This recognizes that
Dwayne James
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

American Red Cross
We'll be there.

This recognizes that
Gary Henery
has completed the requirements f
Standard First Aid
conducted by
Central WV Chapter
Date completed 2-28-02
The American Red Cross recognizes this certi
as valid for 3 year(s) from completion d

This is to certify that:
CHRIS BURKE
has successfully completed the training course

"Basic First Aid"
(4 Hour Initial Course)

This training was conducted on 03-15-02
at Wheelersburg, Ohio, by ECO-FIRST, Inc.
This certification expires on 03-15-04

Authorized Signature: Dana L. Tomas

This is to certify that:
DOUG A. MYERS
has successfully completed the training course

"Basic First Aid"
(4 Hour Initial Course)

This training was conducted on 03-15-02
at Wheelersburg, Ohio, by ECO-FIRST, Inc.
This certification expires on 03-15-04

Authorized Signature: Dana L. Tomas

This is to certify that:
DAVID BEAM
has successfully completed the training course

"Basic First Aid"
(4 Hour Initial Course)

This training was conducted on 03-15-02
at Wheelersburg, Ohio, by ECO-FIRST, Inc.
This certification expires on 03-15-04

Authorized Signature: Dana L. Tomas

This is to certify that:
DOUG TROUT
has successfully completed the training course

"Basic First Aid"
(4 Hour Initial Course)

This training was conducted on 03-15-02
at Wheelersburg, Ohio, by ECO-FIRST, Inc.
This certification expires on 03-15-04

Authorized Signature: Dana L. Tomas

This is to certify that:
SENAH GUESLER
has successfully completed the training course

"Basic First Aid"
(4 Hour Initial Course)

This training was conducted on 03-15-02
at Wheelersburg, Ohio, by ECO-FIRST, Inc.
This certification expires on 03-15-04

Authorized Signature: Dana L. Tomas

This is to certify that:
JULIE GLOCKNER
has successfully completed the training course

"Basic First Aid"
(4 Hour Initial Course)

This training was conducted on 03-15-02
at Wheelersburg, Ohio, by ECO-FIRST, Inc.
This certification expires on 03-15-04

Authorized Signature: Dana L. Tomas

This is to certify that

JOHNNIE E. ANDERSON

has successfully completed the training course

Basic First Aid for Industry

Initial Course (National Safety Council Standard)

conducted by ECO-FIRST, Inc.,

on April 16, 2003, at Milton, West Virginia

Instructor: Dana L. Tomes

Dana L. Tomes

ECO-FIRST, INC.

LESAGE, WEST VIRGINIA

This is to certify that

JOHNNIE E. ANDERSON

has successfully completed the training course

"Basic First Aid for Industry"

(Initial Course-National Safety Council Standard)

This training was conducted on 04-16-03
at Milton, WV, by ECO-FIRST, Inc.
This certification expires on 04-16-05.

Authorized Signature: Dana L. Tomes

P.O. Box 163
Glen Daniel, WV 25844
Phone (304) 934-5576

Mindy L. Tilley

Education

1995 - 1999 Liberty High School Glen Daniel, WV

High School Diploma

1999 – 2003 Mountain State University Beckley, WV

Environmental Science

- Bachelor of Science in Hazardous Materials/Occupational Health & Safety

Accreditations and licenses

- 6 credit hours Environmental Engineering
- 40 hour Hazardous Waste Operations and Emergency Response certification in accordance with 29 CFR 1910.120
- 3 credit hours OSHA Regulations
- 6 credit hours Fire Protection

Objective

Full-time employment with a well established company

Professional experience

1998 - 1998 J.C. Penney Co. Beckley, WV

Seasonal Associate

- Assisted customers, stocked department, cleaned department, maintained cash register

1998 - 2000 Advance Auto Parts Beckley, WV

Cashier

- Greeted customers, stock, clean, maintain cash register, counter sales

2000 - present NAPA Auto Parts Beckley, WV

Counter Clerk

- Maintain inventory control, stock, clean, invoice, past due accounts, counter sales

Awards received

Vivian Mason Scholarship

Carter Family Foundation Scholarship

Summary of qualifications

- Computer skills
- Technical writing skills
- Public relations skills
- Organizational skills
- Multi-tasking skills

Summary of training

- Safety training

References

Don Davis	MSU Professor	(304) 253-7351
Bob Lawson	Retired	(304) 934-5827
Pete Vickers	Napa Auto Parts	(304) 255-1505

Mountain State University

August 18, 2003

Ms. Andrea Thomas
Pinnacle Environmental Corporation

Dear Ms. Thomas:

This letter is to certify that Ms. Mindy Lynn Tilley graduated from Mountain State University with a **Bachelor of Science in Interdisciplinary Studies, concentration HAZMAT and Occupational Health and Safety** degree. The conferred date was May 13, 2003. Ms. Tilley's original diploma had a printer's error and ~~did not~~ state **SAFETY.** The diploma has been reordered.

Should you need further verification or have any questions, please direct your inquiries to me at the telephone (extension 1524) and address listed below. My direct line is (304) 929-1524. My e-mail address is mfarrish@mountainstate.edu. I am available Monday thru Friday, 8:00 a.m. until 5:00 p.m.

In my absence, contact Mrs. Willie Stone at extension 1513, or at her direct line (304) 929-1513. Her e-mail address is wistone@mountainstate.edu.

Sincerely,

Melissa Farrish

Melissa Farrish
Registrar

BOX 9003 • BECKLEY, WV 25802-9003 • 304.253.7351 • 800.766.6067 • WWW.MOUNTAINSTATE.EDU • GOMSU@MOUNTAINSTATE.EDU

233-25-0066
Social Security Number

This is to Certify That

MINDY L. TILLEY

has successfully completed the Hazardous Waste Operations and Emergency Response 8-Hour Annual Training Program specifically designed in accordance with 29 CFR 1910.120.

0.8 CEU Hours

Date Completed: 5-6-03

Donald R Davis CIH

Donald R. Davis, CIH / Instructor

Mountain State University

By the authority of the Board of Trustees of Mountain State University and upon the recommendation of the Faculty hereby confers upon

Mindy L. Tilley

the degree of

Bachelor Of Science In Interdisciplinary Studies
Emphasis on Occupational Health

with all the rights, privileges and honors thereunto appertaining. In Witness Whereof we have hereunto affixed our signatures and the Seal of Mountain State University, on the thirteenth day of May, two thousand three.

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

____ Are the personal flotation devices (PFDs) the US Coast Guard approved International Orange.

____ Inspect the PFD for cuts, holes, or other damage. Discard if any defects are found.

____ For the throwable PDFs to be used for rescue purpose, check for damage to the PDF and the attachment rope.

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**

Safety Equipment List

The Project Manger or SSHO will check emergency equipment daily. The following safety equipment shall be used on site:

_____ Fire Extinguishers (2)

_____ Eye wash bottle

_____ Cellular phone

_____ Personnel decontamination materials

_____ 16-unit first aid kit

Contents of the 16-unit first aid kit must contain the following:

_____ 1 unit (box) Betadine swabs, 10 per box

_____ 1 unit (box) 1"x 3" adhesive bandages

_____ 2 units 2" bandage compress dressings'

_____ 2 units 4" bandage compress dressings'

_____ 2 units 3"x 3" plain gauze pads (10 per unit)

_____ 1 unit plain gauze stretch bandage (2"x 6 yards)

_____ 2 units 3" Ace Bandage

_____ 1 roll 3" surgical tape

_____ 1 unit tourniquet, scissors/tweezers

_____ 2 units triangular bandage

_____ 1 unit (box) Secta-Soothe swabs (Sting Kill), 10 per box

_____ 2 units Instant Cold Packs

_____ 1 box ammonia inhalants (Note: **DO NOT** use for victim suspected of having a convulsive seizure)

_____ Non-sterile surgical gloves (3 to 4 pairs)

_____ Tongue depressors

_____ CPR mouth guards

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:

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._____

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.)*

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.)***

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

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

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.)*

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

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

DAILY PRE-OPERATIONAL CHECKLIST FOR CRAWLER TRACTORS, DOZERS, SCRAPERS, MOTOR GRADERS, BACKHOES, HEAVY HAULAGE UNITS
U.S. Army Engineer, Huntington District

INSTRUCTIONS

SECTION 1 – GENERAL INFORMATION:

a. *Date – Enter month, day, and year of Safety Inspection.*
b. *Owner / User – Enter designated ownership of equipment (Corps, Corps leased or Contractor by name).*
c. *Contract Number – Contractors enter the respective contract number.*
d. *Type of Equipment – Enter Ford 515 Backhoe, JD 450 Bulldozer, etc.*
e. *Number – Enter equipment number Contractor has issued on large scale operations.*
f. *Inspected By – Enter signature and title of Corps or Contractor inspector (Corps inspector may be a maintenance leader, maintenance mechanic or operator and a Contractor inspector may be a mechanic, operator or service person).*
g. *Reviewed By – Enter signature and title of Corps or Contractor reviewer (Corps reviewer may be a maintenance leader, maintenance mechanic, manager or supervisor and a Contractor reviewer may be the mechanic, shift leader, foreman or superintendent). Before a signature and title of Corps or Contractor reviewer is entered the checklist must be reviewed and the equipment spot checked unannounced to ensure inspections are performed.*

SECTION 2 – DAILY PRE-OPERATIONAL CHECKLIST: Check Yes, No or Not Applicable if question or statement does not apply.

SECTION 3 – RECEIPT OF ACKNOWLEDGMENT: Enter signature, title and date signed by personnel acknowledging receipt of the checklist. If Corps personnel was the inspector and reviewer a Corps manager, supervisor or responsible employee will sign the receipt of acknowledgment. If a Contractor personnel was the inspector and reviewer the checklist becomes a part of the official project file and a copy is furnished to the Contracting Officer Representative (COR), the COR will then sign the receipt of acknowledgment. The COR may request a copy of the checklist at any time. The COR or a representative may perform an unannounced spot check inspection to ensure compliance of safety inspection requirements. To determine if inspector and reviewer are Corps or Contractor personnel see SECTION 1, item f. and g.

SECTION 1 — GENERAL INFORMATION

a. Date	b. Owner/User	c. Contract Number
d. Type of Equipment		e. Number
f. Inspected By (Signature) (Title)	g. Reviewed By (Signature) (Title)	

SECTION 2 — DAILY PRE-OPERATIONAL CHECKLIST

NOTE: Reference U.S. Army Corps of Engineers Safety and Health Requirements Manual (EM 385-1-1, April 1981, as revised). (Equipment must be in full compliance with checklist and contract requirements.)	Yes	No	Not Appl
1. Are the rollover protection system and seat belts in good condition?			
2. Are all lights operable? Service, warning, signal and tail.			
3. If equipment is used on highways or streets are slow moving vehicle signs installed? (Must be installed prior to use on highways or streets.)			
4. Is safe 3-point access provided the operator to the operating compartment?			
5. Is proper protection provided the operator? Grills, screens, canopies, etc.			
6. Are brakes (service and parking) operable?			
7. Are the reverse alarm signals operable?			
8. Is cab glass free from breaks, cracks or distortion?			
9. Are shields, guards, and covers in place?			
10. Are air tanks drained and in good condition?			
11. Is there any physical damage evident to the unit?			
12. Are tracks in good condition and properly adjusted?			
3. Is there any evidence of damage to undercarriage and track mountings?			
14. Are the blade, C-frame, hydraulic lines and cylinders in good operating condition?			
15. Are all towing devices adequate and properly mounted?			
16. Are the winch unit and cables in good working condition?			
17. Are all tires and wheels in good condition and evenly matched?			

	Yes	No	Not Appl
18. Are tires properly inflated according to manufacturers recommendations?			
19. Is the unit equipped with the required fire extinguisher? (5:B.C. Rating minimum)			
20. Does the unit have an approved first aid kit? (16-unit minimum)			
21. Are all instruments operable? (Ammeters, pressure gauges, temperature gauges & tachometers.)			
22. Are operating levers, pedals, etc., operable?			
23. Are outriggers operable?			
24. Are oil levels as recommended?			

25. Remarks:

SECTION 3 RECEIPT OF ACKNOWLEDGMENT

Receipt Acknowledged by: *(Title)* *(Date)*
(Signature)

For Safety Staff 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
GOVERNMENT: ☐ CIVILIAN ☐ MILITARY	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ CONTRACTOR	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☐ PUBLIC	☐ FATAL ☐ OTHER		☐	

2. PERSONAL DATA

a. 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 ☐ ON DUTY ☐ TDY ☐ OFF DUTY			

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

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

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

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

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

MOTOR VEHICLE ACCIDENT

a. 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			

8. 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) #

10. 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
'GN: Was design of facility, workplace or equipment a factor?	☐	☐
...PECTION/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	d. DATE *(Mo/Da/Yr)*	e. ORGANIZATION IDENTIFIER *(Div, Br, Sect)*	f. OFFICE SYMBOL
CORPS _____ CONTRACTOR _____			

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

COMMAND APPROVAL

ENTS

COMMANDER SIGNATURE	DATE

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

10. ACCIDENT DESCRIPTION *(Continuation)*

10d. 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: _____
ADDRESS: _____
CITY/STATE/ZIP: _____
BILL TO: _____
CITY/STATE/ZIP: _____

CONTACT PERSON: _____
TELEPHONE/FAX: _____
SITE ID & STATE: _____
PROJECT ID: _____
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 →

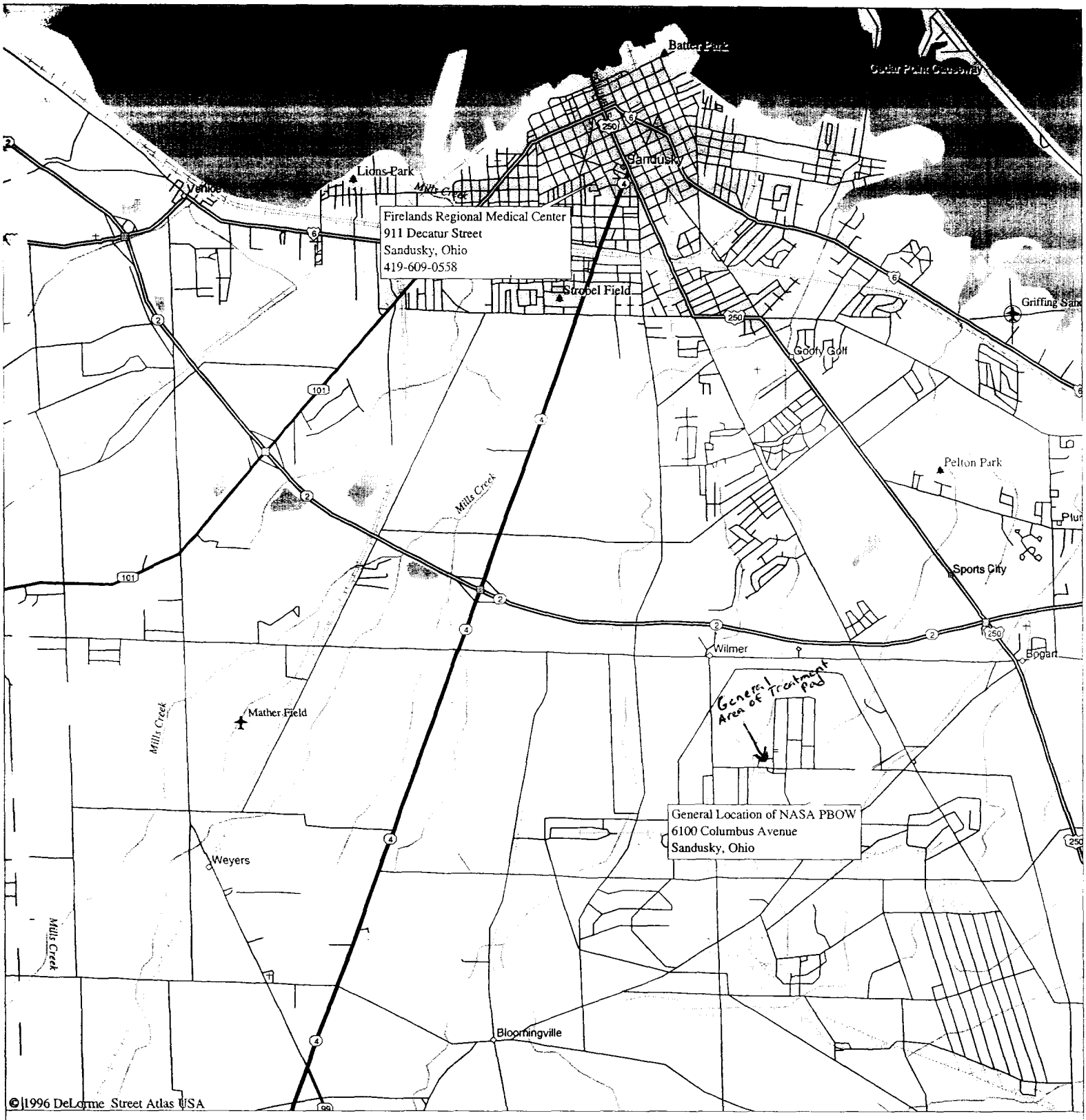
SAMPLE ID	NO. & TYPE OF CONTAINERS	SAMPLING DATE / TIME	MATRIX	SAMPLE COMP / GRAB	ANALYSIS REQUESTED & METHOD													COMMENTS

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 MAP



Mag 13.00
ed Oct 01 10:54 2003
Scale 1:62,500 (at center)
1 Miles
2

Secondary SR/Road/Hwy Ramp
Major Connector
State Route
Primary State Route
Ferry
Interstate/Limited Access
US Highway
Utility/Pipe
Railroad
Point of Interest
Airfield
Park/Reservation
Locale
City
Public Airport
Private Airport

YellowPages by AOL

Get Directions

Back to Deta

Your Starting Point:
6100 Columbus Ave
Sandusky, OH

Your Destination:
Firelands Community Hospital
911 Decatur St
Sandusky, OH 44870
419-609-0558

Yellow Pages (All) Go

Browse Categories:
- MapQuest Yellow Pages Main
- Health & Medicine
- Healthcare Facilities
- Hospitals
- Business Details
- **Driving Directions**

Still can't find what you're looking for?
Let us help!

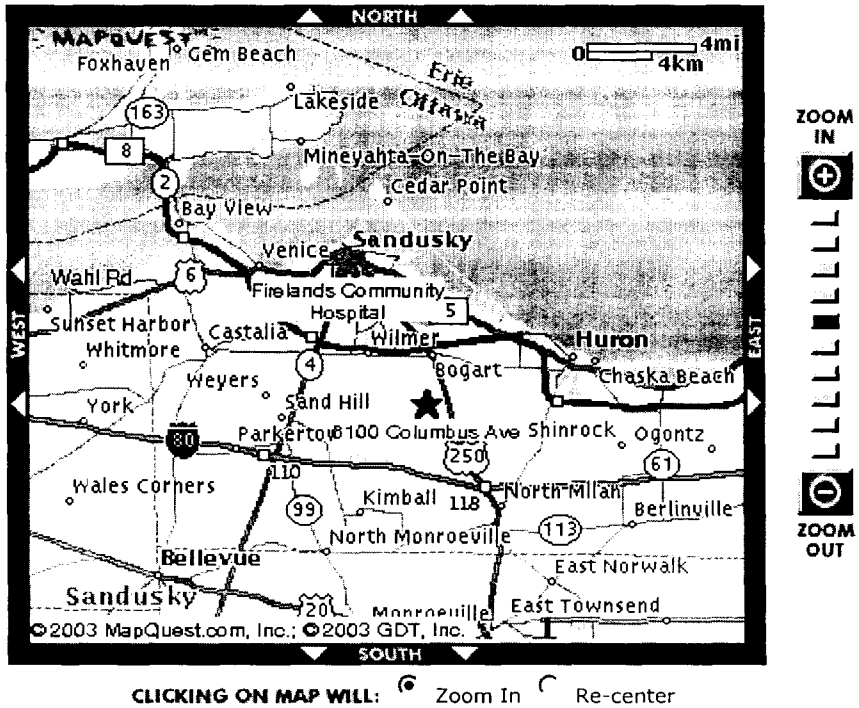
Estimated Travel Time: 15 minutes — 7.89 miles

1: Start out going Northwest on COLUMBUS AVE toward N MAGAZINE RD.	1.35 miles
2: Turn RIGHT onto TAYLOR RD.	0.74 miles
3: Turn SLIGHT LEFT onto CR-112/BOTAY RD. Continue to follow CR-112.	0.40 miles
4: Turn LEFT onto US-250.	3.96 miles
5: Turn SLIGHT RIGHT onto US-250/SYCAMORE LINE RD.	0.35 miles
6: Turn SLIGHT LEFT onto WARREN ST/US-6/W CLEVELAND RD. Continue to follow WARREN ST/US-6.	0.45 miles
7: Turn LEFT onto E MONROE ST.	0.53 miles
8: Turn LEFT onto DECATUR ST.	0.12 miles

Get It Done

- Format for Printing
- E-mail to a Friend
- Get Reverse Directions
- Get Directions Starting From This Business

For Business Owners:
- Create or Update a Yellow Pages listing.
- Advertise your business in the AOL Yellow Pages.



CLICKING ON MAP WILL: Zoom In Re-center

APPENDIX E QC REVIEW

Quality Assurance Certification
Site-Specific Safety and Health Plan Addendum

TNT Area B and Pentolite Road Redwater Pond Area
Bioremediation of Contaminated Soil
Plum Brook Ordnance Works
Sandusky, Ohio

Contract No. DACW69-03-D-0007
Work Order No. 0004

This document is provided to certify that the independent Internal Quality Control Team (IQCT) have reviewed the Site-Specific Safety and Health Plan Addendum 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			
	Joseph Wheeler		8-25-03
Peer Review			
	Julie Glockner		

Quality Assurance Certification
Site-Specific Safety and Health Plan Addendum

TNT Area B and Pentolite Road Redwater Pond Area
Bioremediation of Contaminated Soil
Plum Brook Ordnance Works
Sandusky, Ohio

Contract No. DACW69-03-D-0007
Work Order No. 0004

This document is provided to certify that the independent Internal Quality Control Team (IQCT) have reviewed the Site-Specific Safety and Health Plan Addendum 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			
	Joseph Wheeler	_____	_____
Peer Review			
	Julie Glockner	Julie Glockner	8/26/03

Comments on Site Specific Safety and Health Plan Addendum

TNT Area B and Pentolite Road Redwater Pond Area
Bioremediation of Contaminated Soil
Plum Brook Ordnance Works
Sandusky, Ohio

Contract No. DACW69-03-D-0007
Work Order No. 0004

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. Comment: Considering removing the detailed task information or at least minimizing the information

Response: Concur, change made

2. Comment: Section 2.2—it seems like the order of the tasks needs to be arranged in a more logical order, as they will be performed.

Response: Do not concur, the listing of the tasks is as it is listed in the SOW, while listing the tasks in order of occurrence seems like a good idea, a problem will arise with having different tasks numbers in the plans versus what is in the SOW. This can lead to un necessary confusion.

3. Comment: Page 5, last paragraph in section 1.2.4.7-- add " It is recommended that... in front of the sentence.

Response: This paragraph was removed pursuant to comment 1

4. Comment , section 2.2.4.9- Indicate that multiple Frac tanks may be needed if having to wait on analysis of water prior to disposal.

Response: Concur, sentence was added concerning the need for Frac tanks

5. Comment: Page numbers in printed copy start on page 2 numbered as page 1. Please check your copy for start of page numbers.

Response: Concur, checked the page numbers, they appeared fine, may be an e-mail glitch.

6. Comment: Table of Contents. Please check the following sections in table of contents and report for consistency: Section 2.2.4.10 (Task J listed in table of contents and Task 7J listed in section heading. Same with Section 2.2.4.11, Section 3.3.5, Section 5.1.1, Section 5.3, Section 5.4, and Section 7.3. Also the tabs on page ii of the table of contents (sections 3.2.3 -3.2.5 and sections 3.3.1 – 3.3.12) are not moved over far enough.

Response: Concur, changes were made as appropriate

7. Comment: Section 2.2.4, 1st paragraph, last sentence: Revise to something like, "All sample results were non-detect for TCLP lead."

Response: Concur, sentence was changed

8. Comment: Section 2.2.4.2 last sentence on page 3: Suggest adding that the volume of material <u>for each test</u> is approximately 15 gallons.

Response: Do not concur, the information provided in this section deals with the USACE requirements for the bench scale testing. The 15 gallon size was not a requirement but was a number chosen buy WTI and REIC labs in the hopes of having sufficient sample size for composting. The Bench Scale Test Plan details the information for each recipe.

9. Comment: Section 2.2.4.12, 3rd sentence starting with "Alternately,.....to meet remediation goals, of unless...." The "of" should be revised to "or".

Response: Concur, change made

10. Comment: Section3.3.9, 8th bullet, Should it read Level C PPE or possibly Level D PPE ?

Response: Concur, change was made to Level C with possible downgrade to Level D.

11. Comment: Section 4.1, Item O, I believe the spelling is "Meyer". May want to call and confirm.

Response: Concur, the spelling was corrected

12. Comment: Section 5.1, Level B PPE will consist of:, last bullet, end parenthesis mark is missing.

Response: Concur, change was made

Comments on Site Specific Safety and Health Plan Addendum

TNT Area B and Pentolite Road Redwater Pond Area
Bioremediation of Contaminated Soil
Plum Brook Ordnance Works
Sandusky, Ohio

Contract No. DACW69-03-D-0007
Work Order No. 0004

The following comments were provided by NASA Plum Brook personnel. All comments resulting from this review has been resolved and/or incorporated.

Page 5: 2.2.4.8 Air Monitoring Task.
What are the exclusion zones for the various activities? I visited the site today and Zatto told me that the contractors (GEM in particular) working at HTF wouldn't be able to use their trailer when WasteTron was screening the soil. We need to know ASAP what exclusion zones are required for ALL activities so that we can coordinate with other work conducted on station. *(I hate to say it, but this issue should have been brought to our attention a long time ago. There is a lot of activity on Station and we (NASA) have to coordinate it all. I realize the urgency of this project but the owners of the other projects are also fighting timetables with equal preference.)*

Response: Concur, the section 2.2.4.8 was changed to the following and Section 2.2.4.8.1 was added

Air monitoring shall be performed to ensure the safety of personnel and/or determine if the level of personal protective equipment (PPE) should be upgraded. Air monitoring for nitroaromatics at the perimeter of the exclusion zone will not be performed after discussion with the USACE POC. It is not believed that the nitroaromatics will present a since the ambient temperatures are low and the nitroaromatics do not volatilze that readily. Furthermore, the soil is wet therefore ,little dust will be generated that might contain nitroaromatics. At this time, it is anticipated that air monitoring will be performed during composting activities for ammonia, methane, hydrogen sulfide, carbon monoxide, and carbon dioxide. Low levels of ammonia will be emitted from the manure used in the composting during the first few weeks of the composting process. Previous pilot scale composting activities (WVOW, Point Pleasant, WV) have shown ambient air quality levels of ammonia remained < 5.0 parts per million (ppm) during composting activities. Carbon dioxide is a product of the degradation process for composting materials. Previous pilot scale composting activities (WVOW, Point Pleasant, WV) have shown ambient air quality levels of carbon dioxide remained <1,000 ppm during composting activities. If aerobic conditions are maintained in the windrows, methane and hydrogen sulfide will not be generated during composting. The requirement for daily windrow turning at the beginning of the composting process which may be lengthened to every other day near the middle of the composting process is sufficient to ensure that aerobic conditions are maintained. Carbon monoxide will be emitted from the windrow turner while it is in operation. Previous pilot scale composting activities (WVOW, Point Pleasant, WV) have shown ambient air quality values for carbon monoxide to be "not detected" directly after use of the windrow turner.

2.2.4.8.1 Exclusion Zones for Various Activities

To ensure safety of site visitors, NASA personnel, and NASA subcontractors, WTI will establish exclusion zones for the soil screening and composting activities. WTI recommends an eighty foot exclusion zone for soil screening activities. The possible exposure hazards associated with screening activities are particulate and nitroaromatic compounds (specifically 2,4- DNT). If necessary, water will be used for dust suppression during screening activities. Suppression of dusts will significantly limit possible exposure during the screening operations. Due to the chemical nature of the nitroaromatics, as well as ambient temperatures expected during screening operations, it is not expected that the nitroaromatics will volatize to levels that will pose a health hazard. It should be noted that the 80-foot exclusion zone is based on the minimum distance recommended in the Emergency Response Guidebook

for spills of 2,4-DNT (as a pure compound). The highest concentration of 2,4-DNT in the soil is < 1.0%; therefore, it is believed that the 80-foot distance for the exclusion zone is highly protective of visitor and subcontractor safety. Inside the exclusion zone, within 20 feet of the screen, WTI personnel will wear respiratory protection.

WTI recommends that the same 80-foot exclusion zone be utilized for the composting activities. This distance was chosen based upon the minimum distance for the 2,4-DNT as stated in the previous paragraph. Inside the exclusion zone, within 20 feet of the treatment pad, WTI personnel will wear respiratory protection during the first several weeks of the composting process. Personnel may be able to downgrade the level of PPE as the composting process proceeds depending upon the degradation of nitroaromatics in the soil. It may be necessary to restrict road traffic, if pre-approved by NASA, near the treatment pad to ensure the 80-foot exclusion area. Based upon previous pilot scale activities (WVOW, Point Pleasant, WV), the emissions of ammonia and carbon dioxide from the composting itself have been minor in comparison with OSHA PELs and methane, hydrogen sulfide, and carbon monoxide have not been detected at all.

Page 6: 2.2.4.14 Guard Services and Composting Schedule

As I mentioned to you the other day, the controlled deer hunt will be held on every Saturday from Oct 18th until Nov 22nd during the hours of 0730 until 1700. We must coordinate any activity proposed during these times.

Response: the following was added

A controlled deer hunt will held on-site for every Saturday from October 18th through November 22nd during the hours of 7:30 a.m. and 5:00 p.m. During the hours of the controlled deer hunt, WTI personnel will not be on-site. They will perform site activities, such as air monitoring and windrow turning, before or after the hours of 7:30 a.m. and 5:00 p.m. during this time period. WTI will be responsible for coordinating with NASA's security services to ensure site access. WTI will install lighting if work is to be performed prior to sunrise or after sunset on those Saturdays when hunting prohibits personnel from being on-site during the hours of 7:30 a.m. and 5:30 p.m.

Page 6: 3.2 Chemical Hazards

The HASP mentions the risks involved with possible chemicals related to the composting but does not identify any controls or responses to chemical exposure. Although chemical response is in the original HASP, this is a unique process and the controls/response should be as detailed as the risks outlined in section 3.2.

Response: the following was added

Odor emissions are not uncommon during the composting process. Odors are generated by the natural decomposition of the organic material inherent to any compost pile. The use of manure adds to the odor emissions from composting activities. Additionally, if the compost process is allowed to become anaerobic, significant odors and hazardous chemicals (methane and hydrogen sulfide) may be emitted. WTI proposes the following management practices to reduce air emissions from composting activities:

- *Stockpiled amendments (straw and chicken manure) will be covered when not in use.*
- *Every attempt will be made not to overstock amendments.*
- *Amendments will be thoroughly mixed with the contaminated soil. This is necessary for proper bioremediation but it will also decrease emissions.*
- *The windrows will be kept moist (between 40 and 60% moisture) to reduce the potential for dust emissions as well as prevent possible spontaneous combustion of the windrows.*
- *The windrows will be turned at least once daily to ensure an appropriate supply of oxygen is provided within the windrows. This will serve to keep the decomposition process aerobic; thus, limiting the odor emissions as well as preventing the formation of methane and hydrogen sulfide. As the composting process progresses, the windrow turning may be decreased to once every two days.*

Page 16: 3.3.10 Fire Hazards

The spontaneous combustion aspect of this procedure makes us think that we should get Perkins FD involved in a pre-fire plan. We can arrange that but it should be mentioned in the plan.

Response: The following was added to the list of bulleted items

- *WTI will coordinate with the NASA Plum Brook personnel to arrange a pre-fire plan with the Perkins Fire Department.*
- At a minimum, there will be two 20,000 gallon Frac tanks located near the treatment pad, in the event of a fire in the windrows, water from these tanks or from the sumps can be used. The water in the tanks may contain some nitroaromatics, but not in sufficient concentration to be a concern for fire application uses.

Page 21:5.1 Personnel Equipment

What are the hazards to PBS personnel and their contractors? What controls are in place to warn station personnel of high levels of air contamination?

Response: PBS personnel and contractors should not be in danger if they remain outside of the exclusion zone. Even those entering the exclusion zone without respiratory protection should not encounter life threatening hazards though they may develop a severe migraine.

The following was added to the section on Personnel Equipment:

Exclusion zones will be created for the screening and composting activities to ensure that NASA personnel, site visitors, or NASA subcontractors do not enter a potentially hazardous area. Water will be used as dust suppressant, if necessary, to limit dust emissions during screening operations. If air monitoring data from composting activities reveal that a contaminant is at or near the PEL, the WTI SSHO will immediately notify the NASA Plum Brook Safety Office and the NASA POC.

Page 26: 8.1 Emergency Contacts

We suggest using Firelands Regional Medical Center rather than the clinic. Firelands Regional Medical Center (located at 1101 Decatur Street) is a hospital, Perkins Medical Center is a clinic. Ensure security has emergency contact number(s) for off-hour problems.

Response: *Concur, the Fireland Regional Medical Center shall be listed as the hospital and personnel will be directed to go here. Project management has been notified to ensure that the PBS security personnel have emergency contact information for off hour problems.*