Addendum to
PLAN OF OPERATIONS

INTERIM SOIL REMOVAL ACTION Continuation
Soil Excavation and Disposal
Plum Brook Ordnance Works
Pentolite Road Red Water Ponds
Sandusky, Ohio

Contract No. W91237-07-C-0007

Modification 01 for the Bioremediation of Contaminated Soil

Prepared for:

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July 2008

McTech Project Number 200708M

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Contract No. W91237-07-C-0007
Modification 01 for the Bioremediation of Contaminated Soil

1.0 PROJECT DESCRIPTION

The purpose of this Modification 01 to Contract W91237-07-C-0007 is for the bioremediation of 2,4 Dinitrotoluene (2,4-DNT) contaminated soil at the site via ex-situ windrow composting. Only those items addressed in this addendum have changed all other contract and safety and heath requirements remain unchanged. The original Site-Specific Safety and Health Plan (SSHP), McTech September 2007 should be followed in its entirety. Applicability extends to all employees, subcontractors, and visitors. During development of 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, November 2003 Edition, see Appendix E of this Addendum for supplemental Safety and Health information.

1.4 Overview of Tasks

McTech will provide all equipment, labor, materials and supervision necessary for the Bioremediation of Contaminated Soil as described by Modification 01 to contract W91237-07-C-0007.

The following task is modified and required to be performed under Modification 01:

Task 3 Preparation and submission of an Addendum to the Plan of Operations to address composting operations and shall include sections supplementing the ISRA Site-Specific Safety and Health Plan (SSHP).

The task outlined in this section is described in detail in the Addendum to the Plan of Operations (McTech, September 2007). This work shall be conducted by the Contractor in an environmentally acceptable manner conforming to existing federal, state, and local regulations under USACE Huntington District (CELRH) supervision.

1.4.3 (Task 3) Preparation and submission of an Addendum to the Plan of Operations to address operations and shall include sections supplementing the SSHP.

McTech Corp will prepare an addendum to the *Plan of Operations, McTech, September 2007* that covers the office and field activities that have changed based on Modification #1. This addendum will also include a supplement to the SSHP resulting from Modification #1.

Pentolite Road Red Water Pond. The estimated 5,000 cubic yards (7,500 tons) of soil excavated from this area was stockpiled and sampled for disposal to the Erie County Landfill. Analytical results showed the soil to exceed the disposal limits for 2,4-DNT. As a result, McTech will perform bioremediation in the form of ex-situ windrow composting of the contaminated soil to reduce concentrations of 2,4-DNT to non-hazardous levels prior to off-site disposal. McTech will comply with all Federal, State, and Local environmental regulations when treating and disposing of this soil.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

The following has been added to the list of functional areas and qualified personnel for this project.

A. **Quality Control Personnel—** These personnel are responsible for QC at the site. These people have the authority to stop the work if the work plans are not being followed.

McTech Corp QCO	Phone Number
Helen Owens	(937) 478-2322
Connie Livchak	(419) 602-0533
Matt Smith	(541) 513-6981

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

C & K Industrial Services, Inc. Field Personnel	Phone Number
Kameron Kuhl Jr.	(216) 642-0055
Michael Stout	(216) 642-0055
Richard McLaughlin	(216) 642-0055
Gary Price	(216) 642-0055
Mary Mischler	(216) 642-0055
James Garwood	(216) 642-0055

3.0 APPLICABLE or RELEVANT AND APPROPRIATE REQUIREMENTS

There are no changes to these requirements as outlined in the *Plan of Operation, McTech, September 2007*.

4.0 FIELD ACTIVITIES

4.3 Excavation and Disposal of Contaminated Soil

McTech will perform bioremediation in the form of ex-situ windrow composting of the approximately 5,000 cubic yards of 2,4-DNT contaminated soil prior to off-site disposal at the Erie County Landfill.

4.3.1 On-Site Equipment

McTech may use the following equipment on-site to perform the activities associated with this project:

- Tracked excavators (PC-220 or comparable)
- Vacuum truck (3000-gallon CUSCO or comparable)
- Bulldozer (D5C or comparable)
- Enloader (rubber tired)
- Windrow turner
- Compactor
- Tractor
- Straw blower
- Dump trucks (articulated)
- Tractor and trailer used for mobilization of equipment
- Hand tools (rakes, shovels, pressure washer, etc.)
- Minimum of four 10,000 gallon frac tanks
- Water pump (4”) and hoses

4.3.2 Transportation

McTech shall transport the stockpiled material to the designated treatment area within the Pentolite Road Red Water Pond (PRRWP) area. It is anticipated that dump trucks will be used to transport the material to the treatment area.

4.3.3 Treatment Pad

The area to be used for composting consists of approximately four acres adjacent to the PRRWP area. The composting area will be prepared by an initial clearing and grubbing. Most of the disturbed materials will be used to construct a soil berm with a minimum height of 18” around the perimeter of the composting area. Any remaining disturbed soil will be stockpiled for future use during reclamation activities. The surface will be further graded and compacted to no more than a 2% grade. Grading will be accomplished to ensure that all drainage is directed toward the sump. The sump area will be constructed at the west end of the compost area and divided into two locations, one on each side of the access road. The composting area will have no less than 2:1 slopes. The sumps will be lined with a 60-mil high density polyethylene (HDPE) liner or

comparable. To ensure proper access of the windrow turner, stone will be placed around the perimeter and in between each of the windrows as necessary. McTech shall store amendments within the treatment area where they can drain into the sumps. McTech shall place a 2-3" layer of straw under each individual windrow to keep the compost equipment from "eating into" the underlying soils.

4.3.4 Air Monitoring

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. All field personnel are fit tested and their certifications are in Appendix F. At this time, it is anticipated that air monitoring will be performed for ammonia, methane, hydrogen sulfide, carbon monoxide, and carbon dioxide in and around each windrow on the first day of composting to verify these procedures will not create any harmful conditions to the operators. Should results warrant, additional monitoring will be performed. Periodically throughout the composting operation, additional air monitoring will be performed if there are any significant changes to the composting procedures, or if requested by the site safety and health officer (SSHO).

The Environmental Scientist will be performing the air monitoring. Ammonia and carbon dioxide samples will be collected using a Drager® pump and the appropriate Drager® tubes. Methane, hydrogen sulfide, and carbon monoxide samples will be collected using a GasTech 402 or similar device. The instrument will be calibrated at least weekly and it will be operated in conformance with the manufacturer's requirements.

4.3.5 Water Management System

Two collection sumps will be installed to collect run-off water at the west end of the treatment area. Berms will be constructed around the perimeter of the treatment area as part of the water management system. Straw bales will placed around the perimeter of the site to contain sediment runoff. The sumps will be constructed with at least a 2:1 slope and will have a minimum capacity of 30,000 gallons. The sumps will be lined with geotextile liner (60-mil or comparable thickness). The berms (approximately 18" high) will be constructed along all sides of the perimeter of the composting area. The area will be sloped such that any water will run toward the sumps. The water management system is designed such that water collected in the sump can be re-used as contact water during the composting process. Additional water can be obtained from the reservoir adjacent to the project office trailer, if needed. Four frac tanks (10,000 gallons) will be on-site for storage of the sump water if it appears that the sump may overflow. The water in the frac tanks will be analyzed prior to its disposal. Excess water in the sumps may be disposed at the West Area Red Water Pond depending upon sampling results of the water to be discharged. NASA and Ohio EPA will review analytical data from water sampling of the sump prior to allowing discharge in to the West Area Red Water Pond. Discharge to the pond must be done slowly to ensure that no erosion occurs or that pond sediment is not disturbed.

4.3.6 Fencing

The NASA site is a secure site with its own security force. McTech will install plastic construction fencing around the treatment area and storage area.

4.3.7 Ex-Situ Treatment of Contaminated Soil

Bioremediation treatment in the form of ex-situ windrow composting will be used to reduce the 2,4-DNT concentrations to non-hazardous levels. Approximately 5,000 cubic yards of contaminated stockpiled soil requires ex-situ treatment prior to off-site disposal at a non-hazardous landfill. Windrow composting will be accomplished by mixing contaminated soil and amendments to biodegrade the 2,4-DNT. The amendments will consist of chicken manure and straw to promote the bacterial growth necessary for the bioremediation. Approximately 1,200 cubic yards of manure and 7,000 bales of straw will be used in the composting process.

Prior to mixing the soil and amendments, McTech shall place a 2-3" layer of straw in the area where each windrow will be constructed. Contaminated soil and amendments will then be placed into 4 windrows. Each windrow shall be approximately 12 feet wide and 6 feet high. The windrows shall not end any closer than 15 feet from the ends of the treatment pad to allow for the maneuvering of the windrow turner. The spacing (minimum of 15 feet width) between the parallel windrows shall be sufficient to prevent impeding windrow turning and materials handling equipment. It is expected that each windrow will be turned at least once daily; however, when temperatures drop near the end of the composting processing the windrow turning will be adjusted to maintain the proper temperatures. Refer to Section 5.4 of this plan for analytical requirements for the composting process.

4.3.8 Ultimate Disposal of the Treated Soil

Upon completion of the soil treatment, the composted soil shall be disposed of in a non-hazardous landfill licensed to accept these wastes. It is anticipated that the non-hazardous soil will be transported and disposed of at Erie County Landfill.

4.3.9 Guard Services and Composting Schedule

Composting is a 7-day a week operation and NASA employees usually do not work on the weekends or holidays. McTech shall coordinate with NASA's security services (PBOSG) to ensure site access to accomplish the composting efforts as well as to pay for additional guard services required for deliveries (i.e. straw, manure, and backfill) through gates other than the main gate, if required.

5.0 ANALYTICAL REQUIREMENTS

5.4 Windrow Composting

Laboratory analytical results will be used to determine when the composting operation is completed. Field test kits (TNT EnSys® Soil Test System) for nitroaromatics will be used to determine the progress of the composting operation, and verified weekly by analyzing samples by EPA Method 8330. At least one composite sample per windrow will be analyzed weekly using field test kits and one composite sample per windrow will be analyzed.

Prior to the windrow being turned (i.e. aerated), temperature and moisture data will be collected daily from each windrow at 10 equal distant points along each windrow. Moisture data will be collected using a soil moisture meter equipped with a 6-foot solid probe that can be pushed into the windrows. Temperature data shall be collected using a stainless steel probe equipped with a thermocouple attached to a digital thermometer. The probe is approximately 8 feet long.

For field testing purposes, personnel shall collect composited material (after turning) at roughly 10 equal distanced points along each windrow. The samples will be sent to GPL laboratories in Fredrick, Maryland for analysis. Since personnel are collecting the composted material after turning (which mixes the material), they can collect grab samples from about 0 to 6" inches deep while walking along the windrow. Level C PPE will be used during the collection of the samples.

The composting process will conclude when nitroaromatic levels in all soils have been reduced to levels suitable for off-site disposal at a non-hazardous landfill. Completion of composting shall be determined by laboratory analysis with 2,4-DNT levels below 0.13 mg/l.

5.4.1 Nitroaromatics Field Test Method

Field screening for nitroaromatics will be performed on samples from the windrows. McTech proposes to use the TNT EnSys® Soil Test System for field screening of nitroaromatics to determine if degradation of the nitroaromatics is occurring. The EnSys® system is a colorimetric test kit system that detects various nitroaromatic compounds, but it has a greater sensitivity to TNT, DNT, and TNB than it does to other nitroaromatic compounds. The EnSys® system provides absorbance values, which can be used to calculate the concentrations of TNT, DNT, and TNB. The range of this test is from 1 to 30 ppm.

A brief summary of the EnSys® system is as follows. A 10 gram sample of soil is placed in an extraction jar to which 50 milliliters (ml) of acetone is added. The soil and acetone are shaken for 3 minutes to extract the nitroaromatics. After shaking, the mixture is allowed to settle for five minutes and then a syringe equipped with a filter is used to transfer 25 ml of the solution to a sample cuvette. The extract is analyzed to obtain an initial absorbance and then one drop of a developer solution is added to the cuvette. The cuvette is then capped and shaken vigorously for 3 seconds. The resulting solution is analyzed using a spectrophotometer to read the absorbance of the solution. The absorbance value is then calculated using a formula provided by Ensys® to determine concentration.

5.4.2 Sampling and Analytical Requirements for Disposal of Treated Soil

Upon completion of the soil treatment, the composted soil shall be disposed of in a non-hazardous landfill licensed to accept special waste. The anticipated disposal facility for the treated soil is Erie County Landfill. Eric County Landfill indicated that they would receive the treated soil from PBOW but indicated there would be a 200-ton per day restriction during peak operational periods.

Since personnel are collecting the composted material after turning (which mixes the material), they can collect grab samples from about 0 to 6" inches deep while walking along the windrow. Gloves must be worn while collecting. Depending on air monitoring results, level C PPE may have to be worn during sample collection. For disposal purposes, one composite sample will be collected from each windrow. Each sample will consist of material collected from ten descrete locations along the windrow. USACE has been working closely with Erie County landfill on the stockpile sampling and based on prior sampling and analysis the only contaminant of concern was 2,4-DNT. Therefore, Erie County landfill only requires samples to be analyzed per EPA Method 1311 for TCLP for DNT. In addition, compost base samples will be collected and analyzed for total trinitrotoluene (TNT) and TCLP DNT to ensure no contaminate migration has occurred.

TABLE 1: SAMPLING AND ANALYTICAL REQUIREMENTS

SOURCE	REASON	MATRIX	TYPE	FREQUENCY	TIMING	ANALYTES	PROCEDURE
soils from former piles	verification	soil	composite	once	prior to composting	nitroaromatics total, DNT TCLP	1-10pt composite from each pile
air	ppe selection	air	grab	as needed	first day of composting	O2, CO2, CO, H2S, Ammonia, Methane	5 to 10 within breathing space
frac tank	disposal determination	water	composite	as needed	20k + gallon accumulation	nitroaromatics totals, full TCLP, pH, ign.	1 composited from each tank
Windrow	condition	air	grab	daily	prior to turning	temperature, moisture	10 points along each windrow
windrow	composting	compost	composite	weekly	after turning	nitroaromatics totals	1-10pt composite per windrow
windrow (field test)	screening	compost	composite	weekly	after turning	nitroaromatics (screening)	1-10pt composite per windrow
windrow	disposal determination	compost	composite	once	after composting	DNT TCLP, TNT total	1-10pt composite per windrow
soil beneath composting area	verification	soil	composite	once	after composting	nitroaromatics totals, DNT TCLP	1-10pt composite from grid

6.0 EQUIPMENT DECONTAMINATION AND INVESTIGATION DERIVED WASTE

There are no changes in the decontamination procedures as outlined in the *Plan of Operation, McTech, September 2007*. Investigation derived wastes generated during the composting operation will be managed in accordance with the *Plan of Operations, McTech September 2007*.

7. 0 FIELD DOCUMENTATION PROCEDURES

All field documentation procedures as outlined in the *Plan of Operation, McTech, September 2007* will be followed

8.0 SAMPLE PACKING AND TRANSPORTATION

There are no additional sample packaging or transportation requirements.

9.0 MCTECH CORP CHEMICAL QUALITY CONTROL

There are no changes to the chemical quality control as outlined in the *Plan of Operation, McTech, September 2007*.

10.0 DAILY QUALITY CONTROL REPORTS

There are no changes to the daily quality control reports as outlined in the *Plan of Operation, McTech, September 2007.*

11.0 CORRECTIVE ACTION

There are no changes to the correction action plans as outlined in the *Plan of Operation, McTech, September 2007.*

12.0 SPILL PREVENTION, CONTAINMENT, AND COUNTERMEASURE

Spill prevention, containment, and countermeasures procedures were described in Section 12.0 of the Final Plan of Operations (McTech, September 2007) and require only minor modification to the Sections on Potential Spills (12.1), Spill Prevention (12.2), and Spill Containment (12.4).

12.1 Potential Spills

Potential spills may occur from the handling of the amendments (manure and straw), overflowing of the sump, and spills/leaks from the frac tanks that may be used to store sump water. Amendments will be stored in the treatment area so that a spill from these materials will drain to the sump and be captured. Site personnel will monitor the sump to ensure that it does not overflow. A vacuum truck or pump will be used to remove water from the sump to prevent overflowing. The water will be stored on-site in 10,000 gallon frac tanks and analyzed to

determine proper disposal. If analytical data does not meet discharge criteria then the water will be stored in the frac tanks until the water can be used at a later date as contact water for the windrows or can be transported off-site for disposal to an approved facility. Personnel must ensure that discharge of any water into the West Area Red Water Pond is done slowly so as not to cause erosion or disturb pond sediments.

12.2 Spill Prevention

The following are additional spill prevention procedures that will be implemented at the site:

- The four frac tanks shall be visually inspected weekly for leaks. The QC person will be responsible for inspections.
- The sumps shall be inspected weekly to ensure that no damage has occurred to the liner that would allow contaminated water to leak into the surrounding soil.
- The berm around the treatment area shall be inspected weekly to ensure that there are no breaks or low spots that will allow run-off water to leak into the surrounding soil.

12.3 Spill Containment

Damage to the liners in each sump can result in potentially large spills/leakage of contaminated water from the sump. Therefore, care shall be taken not to damage the liners and any damage to the liners shall be repaired immediately even if the damage is above the water line. As much as is feasible, personnel shall not use equipment on or near the liners which may result in tears or cuts to the liners. Personnel shall not throw objects into the sump that might damage the liners. The liner shall be inspected at least once weekly to ensure its integrity.

13.0 PROTECTION OF RIVERS, STREAMS, AND IMPOUNDMENTS

Protection of rivers, streams, and impoundments were described in Section 13.0 of the Final Plan of Operations (McTech, September 2007) and requires only the additional discussion concerning the discharge of sump and pit water into the West Area Red Water Pond area. USACE will have to review analytical data from water sampling of the frac tanks and submit to NASA and Ohio EPA for approval prior to allowing discharge in to the West Area Red Water Pond area. Any discharge to the pond must be done slowly to ensure that no erosion occurs or that no pond sediment is disturbed.

14.0 AIR EMISSION CONTROLS

Air emission controls for dust were described in Section 14.0 of the Final Plan of Operations (McTech, September 2007) and do not require modification or addition in this addendum; however, air emission controls of pollutants from the composting process are addressed in this addendum.

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 may be emitted. McTech 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 odor emissions.
- The windrows will be turned at least once daily to ensure an appropriate supply of oxygen is provided within the windrows and to keep the windrow temperatures between 90 to 160 degrees Fahrenheit. This will serve to keep the decomposition process aerobic; thus, limiting the odor emissions. As the composting process progresses, the required frequency of windrow turning to keep the windrow temperatures between 90 to 160 degrees Fahrenheit will be adjusted.

15.0 SITE-SPECIFIC SAFETY AND HEALTH PLAN SUPPLEMENT

The purpose of this supplement (located in Appendix E) is to address additional safety issues relating to bioremediation of 2,4-DNT contaminated soil at the site through ex-situ windrow composting. The original SSHP (McTech, September 2007) should be followed in its entirety. Additional personnel information has been added to Section 2.0 of this addendum.

16.0 QUALITY CONTROL PLAN SUPPLEMENT

There are no changes to the requirements as outlined in the *Site-Specific Quaility Control Plan, McTech, September 2007*. Refer to Section 2.0 of the addendum for QC personnel information.

17.0 PROJECT SCHEDULE

McTech will furnish originals and copies of the work plans and response to comments in the quantities below. The work plans will also be submitted on CD in .pdf format for inclusion into the electronic Administrative Record. A written response to all comments will also be prepared by McTech and included in the final submittal document. Submittals are as follows:

- Draft and Final Addendum to the Plan of Operations – 7 draft and 7 final copies of each plan to USACE

Addresses for submittals:

U.S. Army Corps of Engineers
Huntington District
502 Eighth Street
Huntington, WV 25701-2070
ATTN: CELRH-EC-CE (Lisa A. Humphreys)

Due Dates, McTech Submittals and Action Items

McTech Submittals / Action Items	No. Days
Submission of Draft Addendum to Plan of Operations	May 5, 2008
Submission of Final Addendum to Plan of Operations	July 8, 2008

18.0 REFERENCES

There are no changes to the references as outlined in the *Plan of Operation, McTech, September 2007*.

Appendix A Scope of Work

DEPARTMENT OF THE ARMY
HUNTINGTON DISTRICT, CORPS OF ENGINEERS
502 EIGHTH STREET
HUNTINGTON, WV 25701

REPLY TO
ATTENTION OF

January 25, 2008

Contracting Division

SUBJECT: Contract Number W91237-07-C-0007, Modification 01

McTech Corporation
8100 Grand Avenue
Cleveland, Ohio 44104-3110

Gentlemen:

Enclosed please find a scope of work for Modification 01, Pentolite Road Redwater Pond Area Bioremediation of Contaminated Soil, Plum Brook Ordnance – Sandusky, OH.

Your proposal should be submitted to this office as soon as possible, but no later than February 1, 2008. If you wish to transmit your proposal by fax, our number is (304) 399-5281 or email **Karen.L.Simmons@lrh01.usace.army.mil**. Your proposal should be in sufficient detail to allow for an analysis of all costs involved completing the work. Any further information on this project given to you by someone other than the Contracting Office shall be considered to be advisory only and not binding.

If you have any further questions, please contact Karen Simmons at 304-399-5182.

Sincerely,

Karen L. Simmons

Karen L. Simmons
Contract Specialist

Enclosure

SCOPE OF WORK – MODIFICATION 1
PENTOLITE ROAD REDWATER POND AREA (PRRWP) BIOREMEDIATION OF CONTAMINATED SOIL
PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO
CONTRACT NO. W91237-07-C-0007
23 January 2008

The following is provided as a modification to the SOW. All other sections not identified as a modification are to remain active as part of the SOW and complied with by the Contractor.

Section 1.0 Introduction. Please replace the following paragraph with the one shown in the original SOW.

In Fall 2007, an Interim Soil Removal Action was conducted at the PRRWP area to remove contaminated soil with levels of TNT above the RGOs as designated in the Feasibility Study for this area. Approximately 14,000 tons were excavated from the contaminated area and sampled for disposal. It was not anticipated that this soil would be hazardous and require treatment or disposal to a hazardous waste landfill. The analytical results revealed approximately 7,000 tons were non-hazardous and that soil has been taken to the Erie County Landfill for use as daily cover. Analytical results showed the remaining stockpiled soil (approximately 7,000 tons / 5,000 CY) are at hazardous levels for 2,4 Dinitrotoluene (2,4-DNT) and require treatment prior to disposal. Disposal of the soil would be to either a hazardous or non-hazardous landfill (depending on the success of the treatment used).

Section 1.2 Proposed Action Description. Pentolite road Red Water Pond Area

Please add the following paragraph to the end of this section.

If soil containing contaminants at hazardous levels are found, then an *ex situ* treatment (i.e., bioremediation) prior to disposal or use will be required.

Section 3.0 Objectives.

Please include the following paragraphs to the end of the 1st paragraph.

As mentioned in Section 1.0, to date, approximately 5,000 CY are at hazardous limits, and require treatment prior to disposal to Erie County Landfill. Based on this scenario, *ex situ* treatment is required prior to disposal or placement back on site (if levels of TNT are below the RGO value of 13.8 ppm and 2,4-DNT are below 0.13 mg/l (making soil non-hazardous).

USACE has received approval from Ohio EPA and NASA, as well as requests from PBOW Community RAB members, to pursue *ex situ* treatment in the form of bioremediation for the stockpiles currently at the site rather than taking to a hazardous landfill (better for community and environment). Prior to performing actual bioremediation activities (i.e., mixing and turning

of soil), the Contractor shall provide addendums to the Work Plans (i.e., SSHP, QCP and Plan of Operations) for regulator review and approval. These plans will address the necessary work changes required to perform the *ex situ* treatment.

Section 4.0 Tasks

Please revise the following tasks as shown.

Section 4.3 (Task 3) Preparation and Submission of an Addendum to the Plan of Operations, if required. Remove last sentence (which would then require the Contractor to prepare an addendum for the *ex situ* composting operations) and add the following to the end of the pharagraph.

Due to the low levels of the TNT RGO (13.8 ppm) set in the approved Feasibility Study, it appears that composting operations may not be able to obtain that level in a timely manner for placement of the composted material back on site. Therefore, at this time, the Contractor shall assume that composting to levels for non-haz disposal (0.13 mg/l) shall be the goal. Soil from this area has been previously composted during the TNT B ISRA efforts in 2003 and the recipe used at that time was successful to reach non-hazardous levels, therefore that recipe shall be assumed to work for this effort. The Contractor shall review that composting effort and use it as a guideline for this undertaking. Because the Contractor is still under contract to dispose of the 7,000 tons/5,000 CY under the original SOW, that plan of operations shall remain as is. To incorporate the composting efforts, <u>the Contractor shall submit an addendum to the Plan of Operations (Composting Work Plan)</u> that includes a separate section for the composting information. This section will detail how composting will be performed. It shall include, but not be limited to the following: permits and certifications required; schedule; project organization and personnel; selection of amendments; emissions, dust, and odor control, including a potential odor control plan that may be implemented at the discretion of the Government's technical representative; operations and process monitoring; protocol for compliance testing; protocol for determining if compost meets criteria for on-site or non-haz disposal; non-composting treatment processes; equipment and servicing; drawings, process material, tracking schedule; and disposal and resuse of water. The addendum should also include sections that describe preparation of the composting area as well as drainage, containment and water disposal issues, rain and cold weather problems, Sampling and Analysis/Field Sampling Plan that would address the compost pile sampling requirements, analytical levels required for placement back in ground or disposal to non-hazardous landfill, decon of equipment, confirmation sampling prior to site closeout and any other pertinent activities occurring during and upon completion of the *ex situ* treatment. The Contractor may use the TNT B Composting Work Plan Addendum as a guideline for this effort.

Section 4.4 (Task 4) Field Activities/Utilities. Please add this sentence to end of paragraph.

The Contractor shall coordinate with PBS in a timely manner for all clearing and grubbing and excavation permits currently in the proposed composting area so as to accommodate the construction activities for the ex-site treatment. Currently, NASA has agreed that the area west and southwest of the office trailer may be used for composting efforts. The Contractor shall coordinate with NASA / PBOSG for all excavation permits within this area.

Section 4.5 (Task 5) Site Survey

Please add the following paragraph to the end of this section.

The Contractor shall be required to survey the compost area (including berms and sump area) so that these areas may be shown in the final composting report and discussed in detail upon confirmation sampling of this area. The Contractor shall also survey the individual areas / quadrants from which the composite confirmation samples are taken so that proof of the disturbed area hasn't been contaminated once composting efforts are completed. Survey efforts for the stockpile area have already been covered under the original SOW.

Section 4.10 (Task 10) Stabilization

Add Section 10 as follows: "Section 4.10 (Task 10) Stabilization and *Ex Situ* Treatment" and revise flow of section to reflect the following:

Section 4.10.1 *Ex Situ* Treatment. Add the following paragraphs/sub-sections under this heading.

4.10.1.1 Task 10A : Amendment Test Plan

This plan was developed during the earlier TNT B and PRRWP Composting efforts and will not be necessary at this time. Therefore, the Contractor shall use the recipe found to be successful during the previous 2003 composting effort.

4.10.1.1 Task 10B: Bench Scale Test Plan

This effort was conducted during the earlier TNT B and PRRWP Composting efforts and will not be necessary at this time. Therefore, the Contractor shall use the recipe found to be successful during the previous 2003 composting effort.

4.10.1.1 Task 10C: Treatment of Contaminated Stockpile Soil

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 non-hazardous landfill. The Contractor shall be responsible for the design of this bioremediation system and shall submit this information in the Composting Work Plan section of the Plan or Operations Addendum for USACE and regulator approval.

4.10.1.1 Task 10D: Transportation

The Contractor shall arrange for transportation of the stockpiled material to the designated treatment area (assumed within the PRRWP area) and placement of windrows to allow composting of all 5,000 CY in one round, not divided into smaller windrows which would require multiple rounds of composting (i.e., 1,000 CY at a time). All material shall be

transported such that any water in it is contained during transportation and no soil escapes from the truck/box.

4.10.1.1 Task 10E: Screening

The consistency of this soil is such that screening is not anticipated and should not be necessary. However, to meet the specifications of the composting equipment, the Contractor should attempt to reduce the size of any degradable materials larger than 1.5 inches in diameter and then include them with the soil to be treated.

4.10.1.2 Clearing and Grubbing

Depending on the designated treatment area, the Contractor may need to clear the area and grade for drainage purposes (flowing into the sump area prior to pumping to frac tanks (sampling if necessary) and then final disposal off-site or depending on levels found, to the WARRP, as was done during the former composting effort).

4.10.1.3 Construction of Treatment Pad

Due to the large volume of contaminated soil, the Contractor shall use not only the stockpile area but also the area adjacent to the office trailer for the composting efforts. The size of the pad shall be maximized to create windrows of the 5,000 CY hazardous soil to accommodate 1 round of effort. The Contractor shall create the windrows appropriately to allow for this increase. The slope of the surface of the area shall not be less than two percent and shall slope to a drain that is connected to a sump outside the pad or directly into a sump area (no less than 3' deep). No surface runoff is to go directly into the creek or outside the treatment area. The Contractor shall use /place 60-mil HDPE within the sump area under the edge of the soil to ensure run-off and drainage to the collection system. Sloping and placement of the drain shall be sufficient to prevent ponding in the treatment area. The Contractor shall also construct areas for short-term storage of amendments (manure and straw), with drainage and a runoff collection system. The Contractor shall also place a 2-3" layer of straw under the each individual windrow (every time a new windrow is placed) to help with initial mixing of the amendments. The Contractor shall also put 2-3" gravel layer (large enough to support tires and not "eat/dig" into existing ground) between each windrow (and on each end if necessary) to use as a travel surface for the equipment. To prevent runoff from or migration of hazardous soil from entering the adjacent stream or outside the compost area, the Contractor shall create a berm using existing soil (possibly from site grading and construction of sump area) as well as install silt fence/straw bales along the perimeter of the compost area.

4.10.1.4 Air Monitoring

Air monitoring shall be performed to ensure the safety of personnel and/or determine if the level of personal protective equipment should be upgraded. Level C will be required for all employees while in the work zone (during composting operations and sampling efforts). A safety officer (i.e., industrial hygienist) capable of performing, reading and understanding the air monitoring requirements for this site as well as for PPE upgrade/downgrade shall be on-site

during compost and sampling efforts. He/She shall also be able to assist in the field screening, sampling and reporting efforts if necessary.

4.10.1.5 Construction of Water Management System

Berms shall be constructed around the perimeter of the treatment area as part of the treatment area's water management system (see Section 4.10.1.3). The berms shall be sized to prevent flood water run-on and to contain runoff. The water management system shall be designed such that water collected in the sump(s) can be re-used as contact water during the composting process. Additional water can be obtained from the West Area Redwater Ponds if needed. Also, depending on sampling results, any additional water left after composting operations are complete may be disposed of in the West Area Redwater Ponds. NASA and Ohio EPA approval are required prior to doing this. Because a heavy rain event can fill the sump area quickly, the Contractor shall have adequate water storage (i.e., frac tanks) for the water that accumulates in the sump area. The Contractor shall keep a workable pump / generator at the site for this. He/She will also be required to sample the frac tank water for disposal on a periodic basis. The Contractor will periodically need use of a vac truck to empty the tank water and transport to either the WARRP or offsite for recycling/disposal. The Contractor shall also place straw bales along the edges of the sump area to prevent sediment from entering the sump with any surface run-off.

4.10.1.6 Fencing

Since this is already a secure site with only NASA and PBOSG employees, only the standard orange safety fencing shall be used around the treatment area/area of compost operations (to designate difference in level of PPE).

4.10.1.7 Composting Process

Due to the success of the 2003 compost efforts for the TNT B and PRRPW contaminated soil, the composting process used at that time shall be used as a guide for these composting efforts. The Contractor shall place the material into windrows that is conducive to the size of compost equipment used. Each windrow shall be approximately 19 feet wide and 6 feet high (depending on what the compost equipment can handle). The windrows shall not end any closer than 20 feet from the open ends of the pad, to allow for turning of equipment. The spacing between the windrows and the berms shall be sufficient (10-15' widths) to promote equipment handling / turning in the area. Each windrow will be turned daily or as often as necessary to maintain composting process. Approximately eight (8) weeks is the anticipated time period during which each batch of windrows will be turned daily. Field test kits for nitroaromatics shall be used to determine progress of the composting process, and verified at least once weekly by analyzing samples by Method 8330. It is anticipated that a straw blower will be used to distribute the straw prior to beginning composting efforts. A wheel loader may be needed to shape the windrows after turning. Also, the Contractor will have to monitor the moisture and temperature of the individual windrows to maintain the composting process. The Contractor shall provide the meters with appropriate sized rods/probes to adequately monitor the middle of the windrows. The Contractor shall detail the sampling requirements in the Plan of Operations. The

composting process will conclude when nitroaromatic levels in all soils have been reduced to levels suitable for off-site disposal to a non-hazardous landfill. Completion of composting shall be determined by laboratory analysis based on the landfill's disposal requirements.

4.10.1.8 Ultimate Disposal of Treated Soil

Upon completion of soil treatment, the composted soil shall be disposed of in a non-haz landfill licensed to accept this waste. The Contractor shall coordinate with the Erie County Landfill for the disposal testing required and the number (i.e. 10 samples equi-distance to create 1 composite sample) and type of samples (i.e., grab vs. composite). The previous composting effort shall be used as a guide for determining these parameters. The Contractor shall assume a quantity increase of 70% (based on the previous TNT B composting efforts) for disposal based on the addition of amendments and the natural expansion of the soil as the process is worked (i.e., 5,000 CY x 1.7 = 8,500 CY, this includes a portion of the original volume negotiated in the original SOW that wasn't previously disposed as non-haz soil). This will also increase labor, equipment usage and timeframe of disposal to landfill (anticipated during Sandusky busy season when landfill can only guarantee 200 tons/day. The Contractor shall be required to survey the compost area and delineate the windrows within the compost pad, the sump area, the storage area, etc (all features other than what was originally at the site).

4.10.1.9 Weekly / Final Treatment Reports

During the operation of the *ex situ* bioremediation process, weekly reports shall be submitted to the Government's technical representative via email and hard copy. These reports shall include all data and observations that pertain to the effectiveness of treatment and shall include representative photos of that week's operations. The draft / final composting report shall be shall be included as an appendix to the PRRWP ISRA draft/final report and shall follow the format of the TNT B and PRRWP Composting Report from the 2003 composting efforts.

4.10.1.10 Guard Services and Composting Schedule

Composting is a 7-day/week operation, and NASA employees usually do not work on the weekends or holidays, therefore, the Contractor is required to coordinate with NASA's guard services (PBOSG) to ensure site access to accomplish their composting efforts.

4.10.1.11 Road Repair

The Contractor shall take all precautions to not disturb the existing roadways within the PBOW facility. However, it is anticipated that with the heavy truck traffic occurring during hauling composted soil to landfill, some road repair may occur. The Contractor shall assume minimal road repair will be required as part of this modification.

Section 6.0 Payment

Please add the following sentence to the end of the section:

Because it is impossible to determine exactly the timeframe and final quantity with which the composting efforts will reduce the levels to non-hazardous, it is currently estimated at 8 weeks of actual composting time and 8,500 CY for disposal (this includes a portion of the original volume negotiated in the original SOW that wasn't previously disposed as non-haz soil). If the timeframe and/or quantity is less than what is reflected in the negotiated proposal then a modification will be issued / negotiated to reflect the actual timeframe/quantity required to reach non-haz levels.

Appendix E Site-Specific Health and Safety Plan Supplement

Supplement to
Site-Specific Safety and Health Plan

INTERIM SOIL REMOVAL ACTION Continuation
Soil Excavation and Disposal
Plum Brook Ordnance Works
Pentolite Road Red Water Ponds
Sandusky, Ohio

Contract No. W91237-07-C-0007
Modification 01 for the Bioremediation of Contaminated Soil

This SSHP supplement does not replace the Final SSHP (McTech, September 2007) but serves as a supplement to that plan. The purpose of this supplement is to address safety issues relating to bioremediation of 2,4-DNT contaminated soil at the site through ex-situ windrow composting.

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Supplement to
SITE-SPECIFIC SAFETY AND HEALTH PLAN

INTERIM SOIL REMOVAL ACTION Continuation
Soil Excavation and Disposal
Plum Brook Ordnance Works
Pentolite Road Red Water Ponds
Sandusky, Ohio

Contract No. W91237-07-C-0007
Modification 01 for the Bioremediation of Contaminated Soil

1.0 Hazard/Risk Analysis

The following summarizes field activities related to bioremediation in the form of ex-situ windrow composting of 2,4-DNT contaminated soil and the actions that can be taken to eliminate or minimize each of those hazards. The additional hazards associated with the performance of contract W91237-07-C-0007 are discussed in the Final SSHP (McTech, September 2007) and will not be reiterated in this supplement.

4.4 Activity Hazard Analysis

The following tables summarize activity hazards related to bioremediation in the form of ex-situ windrow composting of 2,4-DNT contaminated soil and the actions that can be taken to eliminate or minimize those hazards. The additional activity hazards associated with the performance of contract W91237-07-C-2007 are discussed in Appendix A of the Final SSHP (McTech, September 2007).

Hazard Analysis

Activity **Contaminated Soil Relocation** **Reviewed by/date** **RB/ 05/01/08**

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 of the Final Plan of Operations (McTech, September 2007)	40 hour HAZWOPER training, CPR, and First Aid

Hazard Analysis

Activity **Contaminated Soil Relocation** **Reviewed by/date** **RB/ 05/01/08**

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 concentrations 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 of the Final Plan of Operations (McTech, September 2007)	40 hour HAZWOPER training, CPR, and First Aid

Hazard Analysis

Activity **Composting Activities** **Reviewed by/date** **RB/ 05/01/08**

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., composting equipment)	Refer to PPE Checklist in Appendix C of the Final Plan of Operations (McTech, September 2007)	40 hour HAZWOPER training, CPR, and First Aid

Hazard Analysis

Activity **Composting Activities** **Reviewed by/date** **RB/ 05/01/08**

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., composting equipment)	Refer to PPE Checklist in Appendix C of the Final Plan of Operations (McTech, September 2007)	40 hour HAZWOPER training, CPR, and First Aid

Hazard Analysis

Activity **Composting Activities** **Reviewed by/date** **RB/ 05/01/08**

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).	• McTech will assign personnel (subcontractors and McTech 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., composting equipment)	Refer to PPE Checklist in Appendix C of the Final Plan of Operations (McTech, September 2007)	40 hour HAZWOPER training, CPR, and First Aid

Hazard Analysis

Activity **Composting Activities** **Reviewed by/date** **RB/ 05/01/08**

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., composting equipment)	Refer to PPE Checklist in Appendix C of the Final Plan of Operations (McTech, September 2007)	40 hour HAZWOPER training, CPR, and First Aid

1.2 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. McTech 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.

Personnel will be potentially exposed to products brought on the site by McTech. 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 (McTech, September 2007) 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 McTech 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

1.2.1 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 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.

1.2.2 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.

1.2.3 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.

1.2.4 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.

1.2.5 Carbon Monoxide

Carbon monoxide is a 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.

1.3 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. McTech 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 (McTech, September 2007) issued under Contract No. W91237-07-C-0007 and will not be reiterated in this supplement. This supplement will address site-specific conditions for composting equipment hazards, cuts, fire hazards, and biological hazards.

1.3.1 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 of the final SSHP (McTech, September 2007) 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.

1.3.2 Fire Hazards

A possible fire hazard exists because of the stockpiled amendments (straw 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.
- 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.

1.3.3 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, McTech 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 will be used. Even though parasites are likely to be present in chicken 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.

1.3.4 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 Red Water 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.

- McTech will assign personnel (subcontractors and McTech 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 personal floatation device (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 PFD.
- 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.

Appendix F Training Certificates

C&K INDUSTRIAL SERVICES, INC.

Certificate of Completion

This certifies that

Gary Price

Has successfully completed the
40 Hour HAZWOPER Course
in accordance with 29 CFR 1910.120

John Yakovich,
Safety Trainer

June 14, 2008

Date of Completion

REQUEST FOR RESPIRATOR MEDICAL EVALUATION

Corporate Health Centre

NAME: Gary Price
AGE: 34 SOC. SEC. NO. 272-82-0272
EMPLOYER: Barnes

Section I: To be completed by employer
Section II: To be completed by physician or other licensed health care professional (PLHCP)
Section III: To be completed by employee and returned to CHC via enclosed envelope or fax to 419-627-5213

SECTION I

INDICATE TYPE(S) OF RESPIRATOR(S) TO BE USED BY THIS EMPLOYEE

____ Atmosphere-supplying respirator	____ Continuous-flow respirator
____ Open circuit SCBA	____ Closed circuit SCBA
____ Supplied-air respirator	____ Combination Air-line and SCBA
X Air-purifying (non-powered)	____ Air-purifying (powered)

LEVEL OF WORK REPORT (check one):

____ Light X Moderate ____ Heavy ____ Strenuous

TYPE OF EXPOSURE

What substance(s) will employee be working with while wearing respirator. Briefly describe:
Nitroaromatics (Ont)

EXTENT OF USAGE (check one):

X On a daily basis: ____ hourly ____ twice/shift
____ Not daily, but more than once per week
____ Rarely: ____ weekly ____ monthly
____ Emergency situations only

LENGTH OF TIME ANTICIPATED IN HOURS: ____

SPECIAL WORK CONSIDERATIONS (I.E., high places, temperature, hazardous material, protective clothing, etc.): Will be working on this jobsite for 2 months
ppe: Tyvek, gloves, Half Face Respirator with cartridge, Boots

Signature of Company Representative ____
Work to be performed in June + July Date

SECTION II

PLHCP EVALUATION

Respirator Approval: On the basis of the information obtained from the medical evaluation questionnaire, the above named individual, as per OSHA 29 CRF 1910.134 App. C, this individual has been found medically:

(X) Qualified to use a respirator for 1 years
( ) Required to undergo physical examination by a physician to determine respirator qualification

Comments: ____

LHCP Signature [signature] 6/3/08
Date

FORM No. 3604 Rev. 9/98

C&K INDUSTRIAL SERVICES, INC.

Certificate of Completion

This certifies that

James Garwood

Has successfully completed the
40 Hour HAZWOPER Course
in accordance with 29 CFR 1910.120

John Yakovich,
Safety Trainer

June 14, 2008

Date of Completion

REQUEST FOR RESPIRATOR MEDICAL EVALUATION

Corporate Health Centre

NAME: James Garwood
AGE: SOC. SEC. NO. 280-58-4015
EMPLOYER: Barnes Nursery

Section I: To be completed by employer
Section II: To be completed by physician or other licensed health care professional (PLHCP)
Section III: To be completed by employee and returned to CHC via enclosed envelope or fax to 419-627-5213

SECTION I

INDICATE TYPE(S) OF RESPIRATOR(S) TO BE USED BY THIS EMPLOYEE

____ Atmosphere-supplying respirator	____ Continuous-flow respirator
____ Open circuit SCBA	____ Closed circuit SCBA
____ Supplied-air respirator	____ Combination Air-line and SCBA
X Air-purifying (non-powered)	____ Air-purifying (powered)

LEVEL OF WORK REPORT (check one):

____ Light X Moderate ____ Heavy ____ Strenuous

TYPE OF EXPOSURE

What substance(s) will employee be working with while wearing respirator. Briefly describe:
NITROAROMATICS (DNT)

EXTENT OF USAGE (check one):

X On a daily basis: ____ hourly ____ twice/shift
____ Not daily, but more than once per week
____ Rarely: ____ weekly ____ monthly
____ Emergency situations only

LENGTH OF TIME ANTICIPATED IN HOURS: ____

SPECIAL WORK CONSIDERATIONS (I.E., high places, temperature, hazardous material, protective clothing, etc.): WILL BE WORKING ON THIS JOBSITE FOR 2 MONTHS
PPE: TYVEK, GLOVES, HALF FACE RESPIRATOR WITH CARTRIDGE BOOTS

Signature of Company Representative ____ Date
WORK TO BE PERFORMED IN JUNE AND JULY

SECTION II

PLHCP EVALUATION

Respirator Approval: On the basis of the information obtained from the medical evaluation questionnaire, the above named individual, as per OSHA 29 CRF 1910.134 App. C, this individual has been found medically:

(X) Qualified to use a respirator for 2 years
( ) Required to undergo physical examination by a physician to determine respirator qualification

Comments: Non Smoker, Spirometry normal
PLHCP Signature [signature] 6-4-08
Date

FORM No. 3604 Rev. 9/98

C&K INDUSTRIAL SERVICES, INC.

Certificate of Completion

This certifies that

Michael Stout

Has successfully completed the
40 Hour HAZWOPER Course
in accordance with 29 CFR 1910.120

John Yakovich,
Safety Trainer

June 14, 2008
Date of Completion

REQUEST FOR RESPIRATOR MEDICAL EVALUATION

Corporate Health Centre

NAME: Michael A Stout
AGE: 42 SOC. SEC. NO. 294-72-1929
EMPLOYER: Barnes Nursery

Section I: To be completed by employer
Section II: To be completed by physician or other licensed health care professional (PLHCP)
Section III: To be completed by employee and returned to CHC via enclosed envelope or fax to 419-627-5213

SECTION I

INDICATE TYPE(S) OF RESPIRATOR(S) TO BE USED BY THIS EMPLOYEE

____ Atmosphere-supplying respirator	____ Continuous-flow respirator
____ Open circuit SCBA	____ Closed circuit SCBA
____ Supplied-air respirator	____ Combination Air-line and SCBA
X Air-purifying (non-powered)	____ Air-purifying (powered)

LEVEL OF WORK REPORT (check one):

____ Light X Moderate ____ Heavy ____ Strenuous

TYPE OF EXPOSURE

What substance(s) will employee be working with while wearing respirator. Briefly describe:
Nitro Aromatics (DNT)

EXTENT OF USAGE (check one):

X On a daily basis: ____ hourly ____ twice/shift
____ Not daily, but more than once per week
____ Rarely: ____ weekly ____ monthly
____ Emergency situations only

LENGTH OF TIME ANTICIPATED IN HOURS: ____

SPECIAL WORK CONSIDERATIONS (I.E., high places, temperature, hazardous material, protective clothing, etc.): Will be Working on this Jobsite For 2 months
P.P.E. Tyvek, Gloves Half Face Respirator with Cartridge

Signature of Company Representative ____ Date June 3 2008
Work to Be Performed June and July

SECTION II

PLHCP EVALUATION

Respirator Approval: On the basis of the information obtained from the medical evaluation questionnaire, the above named individual, as per OSHA 29 CRF 1910.134 App. C, this individual has been found medically:

(X) Qualified to use a respirator for 2 years
( ) Required to undergo physical examination by a physician to determine respirator qualification

Comments: Nonsmoker

PLHCP Signature [signature] 6-4-08 Date

FORM No. 3604 Rev. 9/98

C&K INDUSTRIAL SERVICES, INC.

Certificate of Completion

This certifies that

Kameron Kuhl, Jr.

Has successfully completed the
40 Hour HAZWOPER Course
in accordance with 29 CFR 1910.120

John Yakovich,
Safety Trainer

June 14, 2008
Date of Completion

REQUEST FOR RESPIRATOR MEDICAL EVALUATION

Corporate Health Centre

NAME: Kameron Kuhl Jr
AGE: 29 SOC. SEC. NO. 292-76-8198
EMPLOYER: Barnes Nursery

Section I: To be completed by employer
Section II: To be completed by physician or other licensed health care professional (PLHCP)
Section III: To be completed by employee and returned to CHC via enclosed envelope or fax to 419-627-5213

SECTION I

INDICATE TYPE(S) OF RESPIRATOR(S) TO BE USED BY THIS EMPLOYEE

____ Atmosphere-supplying respirator	____ Continuous-flow respirator
____ Open circuit SCBA	____ Closed circuit SCBA
____ Supplied-air respirator	____ Combination Air-line and SCBA
X Air-purifying (non-powered)	____ Air-purifying (powered)

LEVEL OF WORK REPORT (check one):

____ Light X Moderate ____ Heavy ____ Strenuous

TYPE OF EXPOSURE

What substance(s) will employee be working with while wearing respirator. Briefly describe:
NITROAROMATICS (DNT)

EXTENT OF USAGE (check one):

X On a daily basis: ____ hourly ____ twice/shift
____ Not daily, but more than once per week
____ Rarely: ____ weekly ____ monthly
____ Emergency situations only

LENGTH OF TIME ANTICIPATED IN HOURS: ____

SPECIAL WORK CONSIDERATIONS (I.E., high places, temperature, hazardous material, protective clothing, etc.): WILL BE WORKING ON THIS JOBSITE FOR 2 MONTHS
PPE: TYVEK, GLOVES, HALF FACE RESPIRATOR WITH CARTRIDGE BOOTS

Signature of Company Representative ____ Date

WORK TO BE PREFORMED IN JUNE AND JULY

SECTION II

PLHCP EVALUATION

Respirator Approval: On the basis of the information obtained from the medical evaluation questionnaire, the above named individual, as per OSHA 29 CRF 1910.134 App. C, this individual has been found medically:

(✓) Qualified to use a respirator for 2 years
( ) Required to undergo physical examination by a physician to determine respirator qualification

Comments: ____
PLHCP Signature [signature] 6/10/8 Date

FORM No. 3604 Rev. 9/98

C&K INDUSTRIAL SERVICES, INC.

Certificate of Completion

This certifies that

Gary Boos

Has successfully completed the
40 Hour HAZWOPER Course
in accordance with 29 CFR 1910.120

John Yakovich,
Safety Trainer

June 23, 2008

Date of Completion

REQUEST FOR RESPIRATOR MEDICAL EVALUATION

Corporate Health Centre

NAME: Boos, Gary
AGE: 39 SOC. SEC. NO. 284-72-0624
EMPLOYER: Barnes

Section I: To be completed by employer
Section II: To be completed by physician or other licensed health care professional (PLHCP)
Section III: To be completed by employee and returned to CHC via enclosed envelope or fax to 419-627-5213

SECTION I

INDICATE TYPE(S) OF RESPIRATOR(S) TO BE USED BY THIS EMPLOYEE

____ Atmosphere-supplying respirator	____ Continuous-flow respirator
____ Open circuit SCBA	____ Closed circuit SCBA
____ Supplied-air respirator	____ Combination Air-line and SCBA
X Air-purifying (non-powered)	____ Air-purifying (powered)

LEVEL OF WORK REPORT (check one):

____ Light X Moderate ____ Heavy ____ Strenuous

TYPE OF EXPOSURE

What substance(s) will employee be working with while wearing respirator. Briefly describe:
NITROAROMATICS (DNT)

EXTENT OF USAGE (check one):

X On a daily basis: ____ hourly ____ twice/shift
____ Not daily, but more than once per week
____ Rarely: ____ weekly ____ monthly
____ Emergency situations only

LENGTH OF TIME ANTICIPATED IN HOURS: ____

SPECIAL WORK CONSIDERATIONS (I.E., high places, temperature, hazardous material, protective clothing, etc.): WILL BE WORKING ON THIS JOB SITE FOR 2 MONTHS
PPE: TYVEK, GLOVES, HALF FACE RESPIRATOR WITH CARTRIDGE, BOOTS

Signature of Company Representative ____ Date

WORK TO BE PERFORMED IN JUNE AND JULY

SECTION II

PLHCP EVALUATION

Respirator Approval: On the basis of the information obtained from the medical evaluation questionnaire, the above named individual, as per OSHA 29 CRF 1910.134 App. C, this individual has been found medically:

(✓) Qualified to use a respirator for 2 years
( ) Required to undergo physical examination by a physician to determine respirator qualification

Comments: ____
PLHCP Signature [signature] 6/10/8 Date

FORM No. 3604 Rev. 9/98

C&K INDUSTRIAL SERVICES, INC.

Certificate of Completion

This certifies that

Mary Mischler

Has successfully completed the
40 Hour HAZWOPER Course
in accordance with 29 CFR 1910.120

John Yakovich,
Safety Trainer

June 14, 2008
Date of Completion

REQUEST FOR RESPIRATOR MEDICAL EVALUATION

Corporate Health Centre

NAME: Mary Mischler
AGE: 37 SOC. SEC. NO. 302-82-6747
EMPLOYER: Barnes Nursery

Section I: To be completed by employer
Section II: To be completed by physician or other licensed health care professional (PLHCP)
Section III: To be completed by employee and returned to CHC via enclosed envelope or fax to 419-627-5213

SECTION I

INDICATE TYPE(S) OF RESPIRATOR(S) TO BE USED BY THIS EMPLOYEE

____ Atmosphere-supplying respirator	____ Continuous-flow respirator
____ Open circuit SCBA	____ Closed circuit SCBA
____ Supplied-air respirator	____ Combination Air-line and SCBA
X Air-purifying (non-powered)	____ Air-purifying (powered)

LEVEL OF WORK REPORT (check one):

____ Light X Moderate ____ Heavy ____ Strenuous

TYPE OF EXPOSURE

What substance(s) will employee be working with while wearing respirator. Briefly describe:
Nitro Aromatics (DNT)

EXTENT OF USAGE (check one):

X On a daily basis: ____ hourly ____ twice/shift

____ Not daily, but more than once per week

____ Rarely: ____ weekly ____ monthly

____ Emergency situations only

LENGTH OF TIME ANTICIPATED IN HOURS: ____

SPECIAL WORK CONSIDERATIONS (I.E., high places, temperature, hazardous material, protective clothing, etc.): Will be working on this jobsite for 2 months

PPE: Tyvek, gloves, ½ Face respirator with cartridge, boots

Signature of Company Representative ____ Date

Work to be performed in June + July

SECTION II

PLHCP EVALUATION

Respirator Approval: On the basis of the information obtained from the medical evaluation questionnaire, the above named individual, as per OSHA 29 CRF 1910.134 App. C, this individual has been found medically:

(X) Qualified to use a respirator for 1 years

( ) Required to undergo physical examination by a physician to determine respirator qualification

Comments: ____

PLHCP Signature [signature] 6/3/07
Date

FORM No. 3604 Rev. 9/98

C&K INDUSTRIAL SERVICES, INC.

Certificate of Completion

This certifies that

Edward Wlodarsky

Has successfully completed the
40 Hour HAZWOPER Course
in accordance with 29 CFR 1910.120

John Yakovich,
Safety Trainer

June 23, 2008

Date of Completion

REQUEST FC RESPIRATOR MEDICAL EV UATION

Corporate Health Center

NAME: Edward A Wroda-sky
AGE: 58 SOC. SEC. NO. 268 50 4989
EMPLOYER: Barnes Nursery Inc

Section I: To be completed by employer
Section II: To be completed by physician or other licensed health care professional (PLHCP)
Section III: To be completed by employee and returned to CHC via enclosed envelope or fax to 419-627-5213

SECTION I

INDICATE TYPE(S) OF RESPIRATOR(S) TO BE USED BY THIS EMPLOYEE

____ Atmosphere-supplying respirator	____ Continuous-flow respirator
____ Open circuit SCBA	____ Closed circuit SCBA
____ Supplied-air respirator	____ Combination Air-line and SCBA
X Air-purifying (non-powered)	____ Air-purifying (powered)

LEVEL OF WORK REPORT (check one):

____ Light X Moderate ____ Heavy ____ Strenuous

TYPE OF EXPOSURE

What substance(s) will employee be working with while wearing respirator. Briefly describe:
NETROAEROMATICS (DNT)

EXTENT OF USAGE (check one):

X On a daily basis: ____ hourly ____ twice/shift
____ Not daily, but more than once per week
____ Rarely: ____ weekly ____ monthly
____ Emergency situations only

LENGTH OF TIME ANTICIPATED IN HOURS: ____

SPECIAL WORK CONSIDERATIONS (I.E., high places, temperature, hazardous material, protective clothing, etc.): WILL BE WORKING ON THIS JOBSITE FOR 2 MONTHS
PPE: TYVEK, GLOVES, HALF FACE RESPIRATOR WITH CARTRIDGE BOOTS

Signature of Company Representative ____ Date
WORK TO BE PERFORMED IN JUNE AND JULY

SECTION II

PLHCP EVALUATION

Respirator Approval: On the basis of the information obtained from the medical evaluation questionnaire, the above named individual, as per OSHA 29 CRF 1910.134 App. C, this individual has been found medically:

(✓) Qualified to use a respirator for 6 months ~~years~~
( ) Required to undergo physical examination by a physician to determine respirator qualification

Comments: ____
PLHCP Signature Brett Kanow / Brett Kanow 6/12/08
Date

C&K Industrial Services, Inc.

Certificate of Completion

This certifies that

Constance Livchak

Has successfully completed the
8 Hour HAZWOPER Refresher Course
in accordance with 29 CFR 1910.120

John P. Yakovich

John P. Yakovich,
Safety Trainer

4/16/08

Date of Completion

RESPIRATOR FIT TEST

Employee Name: (Print) Constance Livchak Date: 6-23-08

Company Name: (Print) C & K Industrial Services, Inc.

Respirator Fitted: (Print) AO – Safety; Quick Latch ½ Face Respirator Size: S

AO – Safety; Full Face Respirator Size: ____

Fit Test Method: Irritant Smoke

Next Due Fit Test: 6-23-09

Fit Tester Name: (Print) John P. Yakovich

Fit Tester Name: (Signature) John P Yakovich Date: 6-23-08

Employee Name: (Signature) Constance Livchak 6-23-08

Employee to recite below passage while wearing respirator:

Rainbow Passage

When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.

THE NATIONAL ENVIRONMENTAL TRAINERS

certify that

Helen Owens

has satisfactorily passed an exam and completed an 8-hour annual refresher training course entitled

Hazardous Waste Operations and Emergency Response

meeting the requirements identified in Title 29 CFR 1910.120.

This course has been awarded 1.0 Industrial Hygiene CM Points by the American Board of Industrial Hygiene-Approval Number 13334. This course is also eligible for .66 Continuance of Certification (COC) points from the Board of Certified Safety Professionals

NATIONAL ENVIRONMENTAL TRAINERS, Inc.

Course Number 1001, Awarded 8 PDH's
Florida Board of Professional Engineers
CEU Provider Number 0004284

Signature of Instructor

April 09, 2008

www.nationalenvironmentaltrainers.com

Clay A. Bednarz, MS, RPIH

Ce ate of Completion

[T]his certificate was presented to

HELEN J. OWENS

for successful completion of the

40 HOUR HEALTH & SAFETY TRAINING COURSE

in accordance with the

OSHA Hazardous Waste and Emergency Response Operations Standard
29 CFR 1910.120

[redacted] [redacted]

Ronald E. Wesley
President

Hagan & Associates Educational Services, Inc.

RESPIRATOR FIT TEST

ıployee Name: (Print) Helen Owens Date: 6-23-08

Company Name: (Print) C & K Industrial Services, Inc.

Respirator Fitted: (Print) AO – Safety; Quick Latch ½ Face Respirator Size: M

AO – Safety; Full Face Respirator Size: _____

Fit Test Method: Irritant Smoke

Next Due Fit Test: 6-23-09

Fit Tester Name: (Print) John P. Yakovich

Fit Tester Name: (Signature) John P Yakovich Date: 6-23-08

ployee Name: (Signature) Helen Owens Date: 6/23/08

Employee to recite below passage while wearing respirator:

Rainbow Passage

When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.

U.S. ARMY CORPS OF ENGINEERS

PROFESSIONAL DEVELOPMENT SUPPORT CENTER
HUNTSVILLE, ALABAMA

CERTIFICATE

This is to certify that

Helen Owens

has completed the Corps of Engineers Training Course

CONSTRUCTION QUALITY MANAGEMENT FOR CONTRACTORS

Given at Dayton, OH (Location) By CELRL-CD (Instructional District) April 22-23, 2008 (Date)

Wesley Bailey
Facilitator

Sponsored by: Associated General Contractors

THIS CERTIFICATE EXPIRES FIVE YEARS FROM DATE OF ISSUE

Chief, USACE Professional Development Support Center

Compliance Solutions

"Today's Training... Tomorrow's Solution"

10515 E 40th Ave, Suite 116, Denver Colorado 80239 800-711-2708

Student Affiliation:
Marshall Miller & Associates
2529

Certificate of Completion

This is to certify that

Matthew Smith

has successfully completed the classroom requirements for

40 Hour HAZWOPER

29 CFR 1910.120(e)

Presented

Friday, August 31, 2007

Compliance Solutions Occupational Trainers, Inc.

Certificate Number: *75468681*

Neval Gupta
Vice President

John Primo Bobba
Instructor

NextCare® URGENT CARE

DUCC DOCTOR'S URGENT Care CENTRE

RESPIRATORY SCREENING

NAME: Matthew Smith

DATE: 06 / 08 / 2006 CONTROL #: _____

SEX: [ ] female [X] male

RACE: [ ] black [X] white HEIGHT:

SS #: 576-33-3596

COMPANY Marshall Miller & Associates

POSITION: Staff Scientist

HISTORY:

(1) Medical - have you ever had any respiratory disease or difficulties?	[ ] yes (explain)		[X] no
(2) Tobacco			
(i) do you smoke:	[ ] yes	/ day	[X] no
(ii) have you ever smoked?	[X] yes	½ / day for 5 years	[ ] no
Occupational - have you ever worked in a			
(i) foundry	[ ] yes for	years	[X] no
(ii) quarry or mining	[ ] yes for	years	[X] no
(iii) asbestos milling plant	[ ] yes for	years	[X] no
(iv) textile mill	[ ] yes for	years	[X] no
(v) other dusty plant	[ ] yes for	years	[X] no

RESPIRATORY FUNCTION (use attached card)

[✓] FEV1 and FVC and FEV1/FVC ≥ 70% - normal

[ ] FEV1 or FVC or FEV1/FVC ≤ 70% - retest semi-annually

[ ] FEV1 or FVC or FEV1/FVC ≤ 60% - refer to Pulmonary Specialist

PHYSICIAN RECOMMENDATION

[✓] there are not restrictions to wearing a respirator.

[ ] the following are the restrictions to the wearing of a respirator:

PHYSICIAN SIGNATURE Ward Bennett MD

Ward E. Bennett, M.D.
NC Lic 9300032

DUCC_81-IMP rev. 11/06

APPENDIX G QC Documentation

Addendum to
Quality Control Certification

PLAN OF OPERATIONS

INTERIM SOIL REMOVAL ACTION Continuation
Soil Excavation and Disposal
Plum Brook Ordnance Works
Pentolite Road Red Water Ponds
Sandusky, Ohio

Contract No. W91237-07-C-0007
Modification 01 for the Bioremediation of Contaminated Soil

This document is provided to certify that the Independent Quality Control Team (IQCT) have reviewed the Plan of Operations 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			
	Rodney Bumgardner		7/8/08
Peer Review			
	Mischelle Stevens	Mischelle Stevens	7/8/08

Quality Control Certification

Addendum to

PLAN OF OPERATIONS

INTERIM SOIL REMOVAL ACTION Continuation
Soil Excavation and Disposal
Plum Brook Ordnance Works
Pentolite Road Red Water Ponds
Sandusky, Ohio

Contract No. W91237-07-C-0007
Modification 01 for the Bioremediation of Contaminated Soil

The following comments were submitted by Ohio EPA, USACE Huntington District, TAPP Contractor, and NASA PBSAll comments resulting from this review has been resolved and/or incorporated.

General:
Ohio EPA (Paul Jayko, 419-373-3038) reviewed the addendum and had no comments, therefore, the addendum was approved as is for Ohio EPA.

The following comments are offered from Lisa Humphreys, USACE Huntington District EC-CE, 304-399-5953.

1. Report cover – the title needs to say something about composting / bioremediation efforts, not just that it's an addendum. Maybe just add that it's Modification 01 for the Bioremediation of Contaminated Soil like is shown on the inside cover sheet. Also, excavation should be capitalized.

   Response: Concur, "Modification 01 for the Bioremediation of Contaminated Soil" was added to the report Cover. Also, excavation was capitalized.

2. Pg 2, Section 2.0 Project Organization and Responsibilities, section A. Quality Control Personnel. The sentence should be revised as follows: "These personnel are responsible for QC at the site. These people have the authority to stop the work if the work plans are not being followed."

   Response: Concur, The sentence was revised to "These personnel are responsible for QC at the site. These people have the authority to stop the work if the work plans are not being followed.

3. Pg 3, Section 4.3.1 On-Site Equipment, bullet list –
   a. Clay should be removed, we didn't put any down

   Response: Concur, Clay was removed from the bulleted list.

   b. What are dump trailers, maybe dump trucks"

Response: Concur, “dump trailers” was changed to “dump trucks.”

c. Include tractor and strawblower

Response: Concur, “tractor” and “straw blower” was added to the bulleted list.

d. Include pressure washer under handtools

Response: Concur, “pressure washer” was added to the handtools list

e. Change two 20,000 gallon frac tanks to four 10,000 gallon frac tanks

Response: Concur, “two 20,000 gallon frac tanks” was changed to “four 10,000 gallon frac tanks.”

f. Include compactor

Response: Concur, “compactor” was added to the bulleted list.

4. Pg 3, Section 4.3.3 Treatment Pad –
   a. The composting area is not within the PRRWP area, it’s adjacent to it across the creek. Revise location in the paragraph
   b. Change paragraph to reflect that the sump area is on the west end only (not both ends) and divided into 2 locations, one on each side of the access road. Everything has been constructed to drain toward that area.
   c. Add the word “comparable” to the end of the sentence talking about the 60-mil liner..
   d. Add the words “ a minimum of “ before talking about the 18” berm to reflect it needs to be at least that tall.

Response: Concur, The section was revised as follows: “The area to be used for composting consists of approximately four acres adjacent to the PRRWP area. The composting area will be prepared by an initial clearing and grubbing. Most of the disturbed materials will be used to construct a soil berm with a minimum height of 18” around the perimeter of the composting area. Any remaining disturbed soil will be stockpiled for future use during reclamation activities. The surface will be further graded and compacted to no more than a 2% grade. Grading will be accomplished to ensure that all drainage is directed toward the sump. The sump area will be constructed at the west end of the compost area and divided into two locations, one on each side of the access road. The composting area will have no less than 2:1 slopes. The sumps will be lined with a 60-mil high density polyethylene (HDPE) liner or comparable. To ensure proper access of the windrow turner, stone will be placed around the perimeter and in between each of the windrows as necessary. McTech shall store amendments within the treatment area where they can drain into the sumps. McTech shall place a 2-3” layer of straw under each individual windrow to keep the compost equipment from “eating into” the underlying soils.”

5. Pg 3, Section 4.3.4 Air Monitoring
   a. Change the paragraph from stating the SSHO for McTech performing the air monitoring to the Environmental Scientist will be performing the monitoring.

Response: Concur, "SSHO for McTech performing the air monitoring" was changed to "The Environmental Scientist will be performing the air monitoring."

b. Also need to expand paragraph to the frequency, time (during and after composting?) and location (perimeter of exclusion zone?) of where the monitoring will occur.

Response: Concur, The section was revised as follows: "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 for ammonia, methane, hydrogen sulfide, carbon monoxide, and carbon dioxide in and around each windrow on the first day of composting to verify these procedures will not create any harmful conditions to the operators. Should results warrant, additional monitoring will be performed. Periodically throughout the composting operation, additional air monitoring will be performed if there are any significant changes to the composting procedures, or if requested by the site safety and health officer (SSHO).

The Environmental Scientist will be performing the air monitoring. Ammonia and carbon dioxide samples will be collected using a Drager® pump and the appropriate Drager® tubes. Methane, hydrogen sulfide, and carbon monoxide samples will be collected using a GasTech 402 or similar device. The instrument will be calibrated at least weekly and it will be operated in conformance with the manufacturer's requirements."

6. Pg 3 & 4, Section 4.3.5 Water Management System
    a. Change the paragraph to mention there are 2 separate sump areas located at the west end of the treatment pad area.
    b. Add that straw bales are to be placed around the perimeter of the site to contain sediment runoff.
    c. Revise sump capacity to say a minimum of 30,000 gallons.
    d. Add the words "or comparable" after 60-mil
    e. Revise the paragraph to state that additional water may be obtained from the reservoir adjacent to the project office trailer, rather than having to use the West Area Red Water Ponds location
    f. Change size of frac tanks to 4-10,000 gallon tanks on site.

Response: Concur, The section was revised as follows: "Two collection sumps will be installed to collect run-off water at the west end of the treatment area. Berms will be constructed around the perimeter of the treatment area as part of the water management system. Straw bales will placed around the perimeter of the site to contain sediment runoff. The sumps will be constructed with at least a 2:1 slope and will have a minimum capacity of 30,000 gallons. The sumps will be lined with geotextile liner (60-mil or comparable thickness). The berms (approximately 18" high) will be constructed along all sides of the perimeter of the composting area. The area will be sloped such that any water will run toward the sumps. The water management system is designed such that water collected in the sump can be re-used as contact water during the composting process.

Additional water can be obtained from the reservoir adjacent to the project office trailer, if needed. Four frac tanks (10,000 gallons) will be on-site for storage of the sump water if it appears that the sump may overflow. The water in the frac tanks will be analyzed prior to its disposal. Excess water in the sumps may be disposed at the West Area Red Water Pond depending upon sampling results of the water to be discharged. NASA and Ohio EPA will review analytical data from water sampling of the sump prior to allowing discharge in to the West Area Red Water Pond. Discharge to the pond must be done slowly to ensure that no erosion occurs or that pond sediment is not disturbed.

7. Pg 4, Section Guard Services and Composting Schedule
    a. Add "(PBOSG)" after "security services" in the 2nd sentence.

Response: Concur, "(PBOSG)" was added after "security services" in the 2nd sentence.

    b. Add "if required" at the end of the 2nd sentence.

Response: Concur, "if required" was added at the end of the 2nd sentence.

8. Pg 5. Section 5.4 Windrow Composting
    a. 1st paragraph – mention which lab we are using (HGL)

Response: Concur in Part, The name of the lab was added, however GPL is the laboratory that is being used.

    b. 2nd paragraph – take out the "several points" and just leave as 10 equi-distance points.

Response: Concur, The sentence was revised to "Prior to the windrow being turned (i.e. aerated), temperature and moisture data will be collected daily from each windrow at 10 equal distant points along each windrow."

    c. The probe is longer than 2', this length would not reach the center of the windrow. Revise to appropriate length

Response: Concur, The probe length was changed from 2' to 6'.

    d. 3rd paragraph – mention that level C PPE will be used during collection of samples.

Response: Concur, The sentence "Level C PPE will be used during the collection of the samples." was added to the end of the paragraph.

    e. 4th paragraph – Please add to the last sentence "with 2,4-DNT levels below 0.13 mg/l".

Response: Concur, "with 2,4-DNT levels below 0.13 mg/l." was added to the last sentence."

9. Pg 5, Section 5.4.1 Nitroaromatics Field Test Method
    a. 1st paragraph - Last sentence talks about detectable concentrations from 0.7 to 30 ppm. As I understand it, this is an exponential value from 0.7 to 30, not actually measuring the

ppms from the sample. Therefore, the higher the number indicates a higher level of contamination, not the actual value of the concentration. So, if you hit 30 on the testing machine, then you've really got a "hot" sample. Need to clarify this understanding in the paragraph. Also, the field testing doesn't work as well w/ DNT as TNT. May want to reference info from the paperwork that came in the sample kits.

Response: Concur, Clarification was made to Section 5.4.1.

10. Pg 6, Section 5.4.2 Sampling and Analytical Requirements for Disposal of Treated Soil
    a. 2nd paragraph – revise paragraph to reflect that depending on the air monitoring results, level C may have to be worn during sample collection.
    b. I believe method 8330 is for totals on TNT, not TCLP. Revise text appropriately.
    c. Expand this paragraph to state that we had been working closely with Erie County landfill on the stockpile sampling initially and that the only concern was the 2,4-DNT, therefore, that's all they were requiring us to sample for disposal. That way it'll be documented as to why we only had to sample for the DNT for disposal and not the full TCLP as usual.

Response: Concur, The paragraph was changed as follows: " Since personnel are collecting the composted material after turning (which mixes the material), they can collect grab samples from about 0 to 6" inches deep while walking along the windrow. Gloves must be worn while collecting. Depending on air monitoring results, level C PPE may have to be worn during sample collection. For disposal purposes, one composite sample will be collected from each windrow. Each sample will consist of material collected from ten descrete locations along the windrow. USACE has been working closely with Erie County landfill on the stockpile sampling and based on prior sampling and analysis the only contaminant of concern was 2,4-DNT. Therefore, Erie County landfill only requires samples to be analyzed per EPA Method 1311 for TCLP for DNT. In addition, compost base samples will be collected and analyzed for total trinitrotoluene (TNT) and TCLP DNT to ensure no contaminate migration has occurred."

11. Pg 7, Section 12.1 Potential Spills
    a. Last sentence – state that it's the "West Area Red Water Pond" in the paragraph.

Response: Concur, "Red Water Pond" was changed to "West Area Red Water Pond."

    b. The sump water is being pumped into the frac tanks for sampling, not sampled directly from the sump area. Any water needed for the compost operations can be pumped directly from the sump area and/or the frac tanks, depending on where it is. Please revise paragraph accordingly.

Response: Concur, Paragraph was revised as follows: "Potential spills may occur from the handling of the amendments (manure and straw), overflowing of the sump, and spills/leaks from the frac tanks that may be used to store sump water. Amendments will be stored in the treatment area so that a spill from these materials will drain to the sump and be captured. Site personnel will monitor the sump to ensure that it does not overflow. A vacuum truck or pump will be used to remove water from the sump to prevent overflowing. The water will be stored on-site in 10,000 gallon frac tanks and analyzed to determine proper disposal. If

analytical data does not meet discharge criteria then the water will be stored in the frac tanks until the water can be used at a later date as contact water for the windrows or can be transported off-site for disposal to an approved facility. Personnel must ensure that discharge of any water into the West Area Red Water Pond is done slowly so as not to cause erosion or disturb pond sediments."

Pg 7. Section 12.2 Spill Prevention

c. Change 1st bullet to say "4 frac tanks"

Response: Concur, The number of frac tanks in bullet #1 was changed to 4.

d. State that the QC person should inspect the tanks since they are always there (rather than the PM or On-site supervisor)

Response: Concur, The sentence was revised to "The QC person will be responsible for inspections."

12. Pg 7, Section 13.0 Protection of Rivers, Streams and Impoundments

a. Throughout paragraph – state it's the "West Area Red Water Pond" rather than just saying Red Water Ponds. Revise text accordingly.

Response: Concur, "Red Water Ponds" was changed to "West Area Red Water Pond."

b. Also state USACE initially reviews the analytical data and presents it to NASA and Ohio EPA for their approval to the ponds.

Response: Concur, The section was revised as follows: "Protection of rivers, streams, and impoundments were described in Section 13.0 of the Final Plan of Operations (McTech, September 2007) and requires only the additional discussion concerning the discharge of sump and pit water into the West Area Red Water Pond area. USACE will have to review analytical data from water sampling of the frac tanks and submit to NASA and Ohio EPA for approval prior to allowing discharge in to the West Area Red Water Pond area. Any discharge to the pond must be done slowly to ensure that no erosion occurs or that no pond sediment is disturbed."

13. Pg 8, Section 14.0 Air Emission Controls

a. Last bullet – this bullet makes it sound like it's just a matter of time before we'll be decreasing to once every 2 days, but it's really all about the temperature of the pile, so it could be every day for 3 weeks and then on that next day, it doesn't have to because the temperature is ok …please reword the bullet to state that it's based on keeping the temperature at temperatures between 90 and 160 degrees and depending on this, turning may occur everyday, twice a day, or once every two days, it's all about keeping the temperature constant, not based on a certain time frame.

Response: Concur, The last bullet point was revised to "The windrows will be turned at least once daily to ensure an appropriate supply of oxygen is provided within the windrows and to keep the windrow temperatures between 90 to 160 degrees Fahrenheit. This will serve to keep the decomposition process aerobic; thus, limiting the odor emissions. As the composting process progresses, the

required frequency of windrow turning to keep the windrow temperatures between 90 to 160 degrees Fahrenheit will be adjusted."

14. Pg 8, Section 15.0 Site-Specific Safety and Health Supplement
    a. Need to include additional persons names, numbers and HAZWPR certificiations (40-hr or 8-hr refreshers) in this section and the appendix.

    Response: Concur, A reference to Section 2.0 of this addendum was added and HAZWOPER certifications were added to Appendix F.

15. Pg 8, Section 15.0 Quality Control Plan Supplement
    a. Need to include new QC personnel info and certification sheets on both this section and appendix.

    Response: Concur, A reference to Section 2.0 of this addendum was added and QC certifications were added to Appendix F.

16. Pg 8, Section 17.0 Project Schedule
    a. Also mention that you'll include it on CD and in .pdf format for inclusion into the electronic Administrative Record.

    Response: Concur, The paragraph was revised as follows: "McTech will furnish originals and copies of the work plans and response to comments in the quantities below. The work plans will also be submitted on CD in .pdf format for inclusion into the electronic Administrative Record. A written response to all comments will also be prepared by McTech and included in the final submittal document. Submittals are as follows:"

    .

17. General – Need to address IDW and how it will be handled (i.e., acetone from field screening kits)

    Response: Concur, Section 6.0 was revised as follows: "There are no changes in the decontamination procedures as outlined in the *Plan of Operation, McTech, September 2007*. Investigation derived wastes generated during the composting operation will be managed in accordance with the *Plan of Operations, McTech September 2007."*

18. General – need respirator fit test certification and plan section

    Response: Concur, Added respirator fit test information to Section 4.3.4.

19. General – need sampling plan section

    Response: Concur, Sampling plan was added to Section 5.4.2.

The following comment is offered from Bob Lallier, NASA, 419-621-3234.

20. In section 4.3.2 on page 4, the width of the windrows is 12' but in Appendix A, under section 1.10.1.7, the width is 19'. Also, please state how many windrows there will be. Please revise addendum accordingly.

Response: Concur, Section 4.3.7 was revised as follows: "Bioremediation treatment in the form of ex-situ windrow composting will be used to reduce the 2,4-DNT concentrations to non-hazardous levels. Approximately 5,000 cubic yards of contaminated stockpiled soil requires ex-situ treatment prior to off-site disposal at a non-hazardous landfill. Windrow composting will be accomplished by mixing contaminated soil and amendments to biodegrade the 2,4-DNT. The amendments will consist of chicken manure and straw to promote the bacterial growth necessary for the bioremediation. Approximately 1,200 cubic yards of manure and 7,000 bales of straw will be used in the composting process.

Prior to mixing the soil and amendments, McTech shall place a 2-3" layer of straw in the area where each windrow will be constructed. Contaminated soil and amendments will then be placed into 4 windrows. Each windrow shall be approximately 12 feet wide and 6 feet high. The windrows shall not end any closer than 15 feet from the ends of the treatment pad to allow for the maneuvering of the windrow turner. The spacing (minimum of 15 feet width) between the parallel windrows shall be sufficient to prevent impeding windrow turning and materials handling equipment. It is expected that each windrow will be turned at least once daily; however, when temperatures drop near the end of the composting processing the windrow turning may be performed every other day. Refer to Section 5.4 of this plan for analytical requirements for the composting process.

The following comment is offered from Julie Weatherington-Rice, TAPP Contractor, Bennett & Williams, 614-882-9122.

22. **4.3.3 Treatment Pad**

My sole set of concerns about this document is directed to the somewhat limited information presented in this paragraph. Last Thursday, June 12, 2008, I e-mailed Lisa Humphreys a list of my concerns about this section. Those lists of concerns, along with her responses, are here included.

My Comments

When the pad construction is described in **Section 4.3.3 Treatment Pad**, there are notations that the sumps will be lined with HDPE liners to keep them from leaking. The text that discusses the creation of the composting pad area discusses grubbing and clearing it and then grading it and compacting it to a 0-2% slope and then adding 2-3 inches of straw before the soil to be composed is laid down.

1. Is the topsoil removed as part of the clearing and grading and stockpiled nearby for reuse after the pad is decommissioned?
2. Are there specifics about how the pad site will be reclaimed and reseeded?
3. While there is a mention of grading and recompacting, it's not clear to me if the recompaction achieved is on the order of a "clay liner" for a landfill or some lower level of recompaction. Ohio requires that clay liners be constructed of materials with cobbles no larger than 4 inches in diameter and that 50% or more of the materials must pass through the 200 mesh sieve. Given the nature of soils in that area, I would expect that soils in the B horizon or below would probably come close to and/or meet that level of grain size requirements, but I couldn't find anything that told me that.
4. Also, clay liners and test pads are supposed to be placed in lifts, no thicker than 6 inches and the recompaction should be done with a sheepsfoot roller and/or a compatible piece of

equipment.

5. Landfill clay liners are typically 5 feet thick.

Lisa Humphreys' Response

1, 2 and 3. Topsoil was removed and during the grading, most of it was used for the perimeter berms, while the vegetation / brush was pushed to the north area (too swampy to use as pad area) and a little bugs/bunny habitat was created for them to use this spring / summer ...the berm material will be placed back on the site when composting / and confirmation sampling has confirmed we didn't leave anything behind ..then we'll be coordinating w/ John Blakeman for any seeding requirements like we did at TNT B stockpile area (no specifics at this time, just based on what John wants/ needs to have at the site). When you see the site, we graded everything to drain to the sumps so that all runoff was contained and would be sampled prior to disposal of sump water. We have 4 10,000 gallon frac tanks on site to hold the water from the sump areas while it is being analyzed at the lab.

4. No, this is not a RCRA cap per se, but we did compact the area w/ the sheeps foot roller and smooth roller as well as put down the small barrier between the soil and existing ground. Last time we composted and went to the trouble of putting down a clay pad (with proper compaction in 2" lifts), the composter continually ate up the clay and kept getting stuck (even though we had a 2-3" gravel road for the rubber tires) ...so, this time, we took the effort and created a much better road for the composter (you'll see this at the site visit) and then have the windrows w/ the barrier below created. Also, we will be sampling the area once the windrows are hauled off so that we're sure we didn't contaminate this site. McTech actually did such a grand job on the pad area, I'm hoping we could use this area for any future composting / treatment, but that will have to be decided down the road on those individual projects. Once you see it, you'll know what I'm talking about.

5. Actually, the levels of the contaminated soil are just about the TCLP limit of 0.13 mg/l, nothing compared to what we composted last time, but still considered above the hazardous limit ..I'm not really expecting it to take the full 8 weeks, but w/ the way the sampling starts and is weekly, we really won't know anything for about 3 weeks (normal lab turnaround time), so we have the 8 week time w/ the contractor and will do whatever it takes to get it below that limit.

My Conclusions

This response from Lisa Humphreys satisfied my set of questions and concerns. Please expand the information found in paragraph at **Section 4.3.3 Treatment Pad** to capture the pertinent points of this dialogue. I am looking forward to observing the site at the next RAB meeting.

Response: Concur, The section was revised as follows: "The area to be used for composting consists of approximately four acres adjacent to the PRRWP area. The composting area will be prepared by an initial clearing and grubbing. Most of the disturbed materials will be used to construct a soil berm with a minimum height of 18" around the perimeter of the composting area. Any remaining disturbed soil will be stockpiled for future use during reclamation activities. The surface will be further graded and compacted to no more than a 2% grade. Grading will be accomplished to ensure that all drainage is directed toward the sump. The sump area will be constructed at the west end of the compost area and divided into two locations, one on each side of the access road. The composting area will have no less than 2:1 slopes. The sumps will be lined with a 60-mil high

density polyethylene (HDPE) liner or comparable. To ensure proper access of the windrow turner, stone will be placed around the perimeter and in between each of the windrows as necessary. McTech shall store amendments within the treatment area where they can drain into the sumps. McTech shall place a 2-3" layer of straw under each individual windrow to keep the compost equipment from "eating into" the underlying soils."